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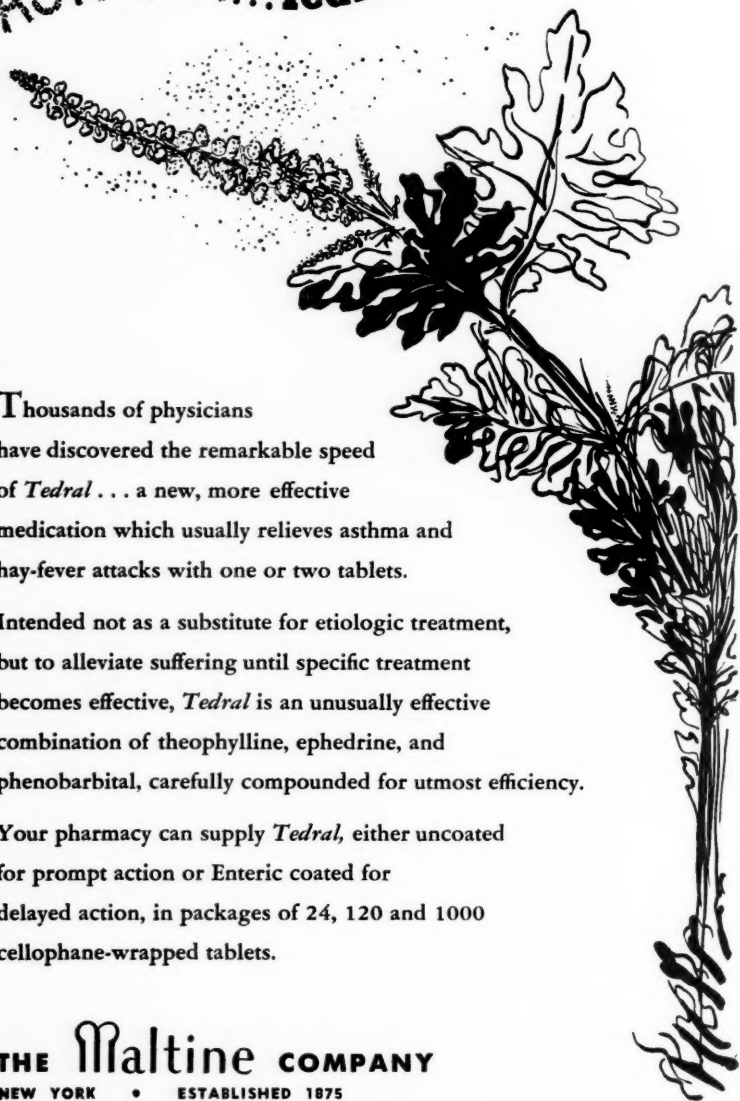
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ARMY ALLERGY FOURTH SERVICE COMMAND 1943

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PREVIOUS reports^{1,2,3} have emphasized the military importance of the allergic diseases. It is felt that a presentation of the clinical findings of the Allergy Section, Surgeon's Office, Headquarters Fourth Service Command, will lend additional significance to these groups of symptoms. The establishment of standardized diagnostic and therapeutic procedures has been productive of satisfactory results in the ambulatory duty patient, as well as effective of rapid and efficient administrative disposition of the disabled hospitalized allergic soldier.

During the past two years four short courses of instruction on the management of allergic diseases have been presented to a total of 180 medical officers. Changes in assignments and personnel transfers have determined the intervals at which these courses are conducted. As an aid to those officers whose training in allergy has been limited to their military experience, an active reprint and abstract file has been maintained to provide a source of reading material and reference in this specialty. Further recognition of the importance of allergy as a military medical factor is indicated by the interest shown in this section by units outside the limits of the Fourth Service Command. At the most recent allergy conference eleven medical officers from the Eighth, Seventh, Sixth and Third Service Commands were present. Standardized allergenic extracts are now supplied not only to our own clinics but to fifty-four station and general hospitals in the other eight service commands. The preparation, standardization and supply of these extracts by the Fourth Service Command Laboratory have not caused any interruption of, nor interference with, the routine laboratory procedures.

¹Presented at the first annual meeting of the American College of Allergists, June 10-11, 1944, Palmer House, Chicago, Illinois.

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At the present time the Allergy Section, Office of the Surgeon, Fourth Service Command, supervises the investigation and therapeutic measures conducted in eighty-nine allergy clinics. Thirty of these are in service command station hospitals, eleven are in service command general hospitals and forty-eight are in Air Corps station hospitals. Of the officers in charge of these eighty-nine clinics, only twenty have had experience in allergy antedating their entrance on active duty. This is a point to remember when considering the number and types of patients, the symptoms and the indicated results to be discussed.

TABLE I. TOTAL PATIENTS—ALLERGY SECTION FOURTH SERVICE COMMAND
November 1942 to November 1943

Clinics	Allergy	Derm. Ven.	Total
Service Command	20,220	5,305	25,525
Air Corps	4,984	1,537	6,521
Total for All Clinics	25,204	6,842	32,046

TABLE II. ALLERGY PATIENTS—ALLERGY SECTION FOURTH SERVICE
COMMAND

Clinics	Army	Civilian	Total
30 Station Hospitals and 9 General Hospitals	18,869	1,351	20,220
28 Air Corps Hospitals	4,550	434	4,984
Total of 67 Clinics	23,419	1,785	25,204

Of the eighty-nine allergy clinics activated or in operation during 1943, sixty-seven of them had been instituted sufficiently long to present a report of the work done. Material for this report was gained from questionnaires submitted to each clinic and completed by the individual medical officer in charge of allergy work. The twenty-two clinics not included herein were of such recent activation that their material will be included in future compilations. A total of 32,046 patients were seen in all clinics reporting (Table I). Included in this figure are 6,842 cases of poison ivy dermatitis diagnosed in fifty clinics. The discussion and tabulation of the patients with dermatitis venenata has been given separate consideration. Most allergy clinics extended their services to civilian dependents, but the greatest number of patients were military personnel. Of the 25,204 patients with allergic symptoms of primary importance, 23,419 were of military status and 1,785 were civilian dependents (Table II).

The symptoms of seasonal hay fever were sufficiently severe to cause 5,373 patients to seek relief by specific pollen therapy (Table III). In a non-critical interpolation, it should be noted that severe seasonal hay fever is a cause for rejection from military service.⁵ Ragweed pollen sensitivity has proven to be the outstanding single factor in producing the distressing

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symptoms of seasonal hay fever. A total of 1,796 patients limited their symptoms to the ragweed season only, while 747 were only grass pollen sensitive as indicated by the history and confirmed by skin testing. More patients, however, were both grass and ragweed pollen sensitive. In this classification there were 2,030 patients. It can be conservatively estimated that 85 per cent of these patients with uncomplicated seasonal hay fever were under specific therapy. This number of patients cannot be taken as an indication of the incidence of seasonal hay fever in the armed forces or even in the Fourth Service Command. Certainly there were many al-

TABLE III. SEASONAL HAY FEVER—ALLERGY SECTION FOURTH SERVICE COMMAND

Clinics	Grass	Ragweed	Combined	Total
Service Command (39)	608	1,193	1,553	4,154
Air Corps (28)	139	603	477	1,219
Total for 67 Clinics	747	1,796	2,030	5,373

TABLE IV. SEASONAL BRONCHIAL ASTHMA—ALLERGY SECTION FOURTH SERVICE COMMAND

Clinics	Grass	Ragweed	Combined	Total
Service Command (39)	129	265	425	819
Air Corps (28)	15	37	75	127
Total for 67 Clinics	144	302	500	946

lergic soldiers who did not avail themselves of therapeutic trial either because of the mildness of their complaints or for reasons which have not been brought to our attention.

For purposes of discussion, bronchial asthma can best be presented as those seasonal cases with and without associated hay fever and those with perennial symptoms with and without seasonal variation (Table IV). Pollen asthma without associated nasal or eye symptoms was the diagnosis in 946 cases. Ragweed pollen sensitivity is again outstanding among this group, there being 302 patients who limited their wheezing, cough and respiratory difficulty to this season. By comparing these with the 144 patients who admitted and demonstrated only a grass pollen sensitivity and with those 500 cases whose complaints existed during both the grass and ragweed seasons, the importance of this particular fall pollen is further emphasized. The association of seasonal hay fever symptoms with those of seasonal bronchial asthma is recorded for 1,384 patients (Table V). Undoubtedly, many soldiers in this group were experiencing their initial asthmatic complications. The explanation for this rests perhaps in the degree of exposure to pollen as a result of their training maneuvers, their bivouacs and their inability to adequately control that degree of "over-ex-

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posure." There were 690 patients in this group who had symptoms of pollen sensitivity during both the grass and ragweed seasons. Some of these may have had symptoms limited to one or the other season prior to their military service, and the above environmental influences must be considered. Of these 1,384 patients, 512 of them were pollen sensitive only to ragweed and 182 limited their complaints to the grass season.

Perennial bronchial asthma has been responsible for the appearance of 7,261 patients in the sixty-seven allergy clinics (Table VI). Only 1,903 of these gave a history and findings suggestive of seasonal variation due

TABLE V. SEASONAL HAY FEVER AND ASTHMA—ALLERGY SECTION
FOURTH SERVICE COMMAND

Clinics	Grass	Ragweed	Combined	Total
Service Command (39)	167	449	515	1,131
Air Corps (28)	15	63	175	253
Total for 67 Clinics	182	512	690	1,384

TABLE VI. PERENNIAL BRONCHIAL ASTHMA—ALLERGY SECTION
FOURTH SERVICE COMMAND

Clinics	With Seasonal Variation	Without Seasonal Variation	Total
Service Command (39)	1,586	4,254	5,840
Air Corps (28)	317	1,104	1,421
Total for 67 Clinics	1,903	5,358	7,261

to pollen, while 5,358 of them denied such exacerbations. Most of these perennial asthmatics were dust sensitive by history and by skin test. Other etiologic factors were chiefly of the inhalent type. In isolated instances, food allergy was considered of primary importance, but always in association with secondary inhalent sensitivities. There is a definite difference between the asthmatic seen in a station hospital and the soldier with asthma admitted to a general hospital. In most reports the listed causative factors for asthma in the station hospital have been pollen, dust and feathers. Reports from the eleven general hospitals in the Fourth Service Command place the additional element of infection high on the list for etiological consideration. This would imply that the more stubborn and therapy-resistant asthmatic problems are seen in the general hospitals. Certainly more so-called "intrinsic" asthma is seen at these installations. The soldier with bronchial asthma is a problem not only within the continental limits of the United States, but in the various battle areas as well. The allergy section at one general hospital⁴ has shown that 86 per cent of the bronchial asthmatics on the wards have been evacuated from overseas. In many of these patients the original onset of asthma started in that part of the world from which they had been returned. Complete relief was experienced by some of them on the return sea voyage, with continued

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freedom from symptoms being noted since their hospitalization in this country. All too frequently, however, there is obtained the long history of pre-induction asthma that has been aggravated by the rigors and exigencies of foxholes and mud. These patients are not mold sensitive by skin test, nor have any other factors been definitely ascertained in the search for the basic or contributing etiology.

Bronchial asthma, therefore, is seen to be the most important allergic disease to the Army. This is apparent from the frequency with which this diagnosis has been made and the disabling properties possessed by these

TABLE VII. SUMMARY OF BRONCHIAL ASTHMA—ALLERGY SECTION
FOURTH SERVICE COMMAND

Clinics	Seasonal Asthma	With S.H.F.	Perennial	Total
Service Command (39)	819	1,131	5,840	7,790
Air Corps (28)	127	253	1,421	1,801
Total for 67 Clinics	946	1,384	7,261	9,591

TABLE VIII. PERENNIAL ALLERGIC RHINITIS—ALLERGY SECTION
FOURTH SERVICE COMMAND

Clinics	With Seasonal Variation	Without Seasonal Variation	Total
Service Command (39)	856	2,001	2,857
Air Corps (28)	249	725	874
Total for 67 Clinics	1,105	2,726	3,831

symptoms. A summary of the bronchial asthma seen in sixty-seven clinics reveals 9,591 patients to have been diagnosed and treated (Table VII). One might expect the perennial asthmatic to be disqualified for military service more readily than the inductee with seasonal symptoms. In both service command and Air Corps clinics, however, the presence of perennial symptoms has been outstanding. Of the total number of asthmatic patients seen in the clinics, 76 per cent (7,261) of these definitely had symptoms throughout the year. The diagnosis of perennial asthma was made upon the history in the presence of symptoms and not upon the history alone. These figures add emphasis to the difficulty encountered by an induction board of medical officers in making an honest, though hurried evaluation of a patient's history. It must be admitted that the perennial asthmatic does not make a capable, physically reliable fighting soldier. If he is retained in service his duties must be assigned within the variable limits of his physical endeavors. His problem, as it concerns us, is one not limited to immediate diagnosis, therapy and administrative disposition; it is a problem that will be with us for many years when claims for benefits are made and collected.

Persistent, year-around complaints of nasal congestion and discharge were factors in bringing 3,831 patients to the allergy clinics (Table VIII).

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Perennial allergic rhinitis was not particularly disabling, but the discomfort resulting from the persistency of symptoms was marked. The diagnosis in each case was based on a history which, in most instances, dated the original onset of complaints many years prior to their clinic visit. The usual patient first presented himself to the nose and throat clinic from from where he was referred for allergy investigation. Nasal smears for eosinophilia were done on most of these patients. This has been an important aid in establishing the diagnosis upon an allergic basis. A seasonal increase in the severity of their symptoms was noted by 1,105 of these

TABLE IX. MISCELLANEOUS ALLERGIC DISEASES—ALLERGY SECTION
FOURTH SERVICE COMMAND

Cases	Service Command (39)	Air Corps (28)	Total
Urticaria	1,343	301	1,644
Migraine	661	158	819
GI Allergy	232	23	255
Food Allergy	1,446	119	1,565
Total for 67 Clinics			4,283

patients. The lack of any seasonal aggravation was determined in 2,726 instances. Essentially the same causative factors as were listed for perennial bronchial asthma are offered in this classification. Dust, feathers and pollen sensitivities were most frequently recorded. Any association between nasal and bronchial perennial symptoms in the same patient has not been clarified in our tabulation, as each patient has been classified on a basis of his primary complaints and diagnosis.

Chronic urticaria has been a source of disturbance and discomfort to the individual soldier as well as to the attending medical officers (Table IX). Ultimate disposition of these cases involves the determination of the causative factors, the degree of resulting disability and the type of duty to which the patient has been assigned. Acute urticaria is no more a problem to the medical officer than it is to the civilian practitioner. The chronicity of symptoms, however, places the additional burden of responsibility for proper administration upon the Army allergist. A thorough search for the etiologic factors has been advocated and a therapeutic trial of elimination and evaluation has been established in all clinics. In all, 1,644 patients with a diagnosis of acute or chronic urticaria were seen in the sixty-seven clinics included in this presentation. Allergy investigation and study have definitely been responsible factors in retaining the majority of these patients on a duty status. It can surely be assumed that the broad program of immunization for military personnel has been an effective originator of many initial attacks of urticaria. In some instances, the lesions from such sources have continued over a rather prolonged period of time.

The diagnosis of migraine was recorded in 819 cases. This classification has been included under miscellaneous allergic diseases in this discus-

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sion. Gastro-intestinal allergy, of which there were 255 cases, has been differentiated from food allergy. In this latter group there were 1,565 patients. In our tabulation there is undoubtedly an occasional duplication of diagnosis in the same patient. The complaints of these soldiers with food allergy have not been listed separately, as it has been our experience that the patient with a marked allergic reaction to a food or group of foods is usually capable of dietary elimination insofar as it is compatible with his military food rations. This statement is based upon the knowledge that the greatest majority of these symptoms due to food sensitivity wheth-

TABLE X. HOSPITAL CASES—ALLERGY SECTION FOURTH SERVICE COMMAND

Cases	Service Command (39)	Air Corps (28)	Total
Seasonal Hay Fever	473	129	602
Bronchial Asthma	4,444	1,003	5,447
Other Allergic Cause	1,746	344	2,090
Total for 67 Clinics			8,139
Hospital Days	148,285	24,170	172,455

er they be migrainous, gastro-intestinal or the like, are of importance secondary to the more severe, more frequent and more manifest allergic respiratory complaints seen in the Army clinics.

The efficiency of a capable, well-trained fighting force is primarily based upon the physical fitness, stamina and proficiency of the individual soldier. That efficiency is directly concerned with an uninterrupted training program. The retarding influence of the allergic diseases upon that same military efficiency is emphasized when consideration is extended to the hospitalization resulting from these symptoms. It must be remembered that the necessity of hospitalizing the military allergic patient is greater than for the civilian patient. No comparison, therefore, can be drawn between the two, nor can this necessity be interpreted as a failure of therapeutic measures. The Army will hospitalize the patient for whom the civilian physician, under similar circumstances, would recommend a daily rest or less arduous labors. Over a period of twelve months, 8,139 allergic patients were admitted to the hospital wards (Table X). This represents 32.3 per cent of the total military allergic patients. Of this number, only 602 were diagnosed uncomplicated seasonal hay fever of sufficient severity to warrant absence from duty. Bronchial asthma was responsible for by far the greatest majority of this 32 per cent. This diagnosis was recorded for 5,447 patients. Unfortunately, no definite indication has been given as to the classification of these asthmatics, but from previous tabulations perennial asthma may safely be considered as the outstanding offender. Hospitalized patients for other allergic reasons numbered only 2,090. This adds further importance to the role played by bronchial asthma as an impediment to the successful conclusion of this war.

The vast quantity of time lost from training because of the incompatibil-

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ity between duty and severe allergic complaints can be realized with the recognition that 172,455 days were spent by these patients in the hospitals. An average of 21.2 days for each patient is revealed. In some branches this represents one-third of their initial period of training. The implication should not be taken, however, that all of this hospital time was necessitated by the severity of the complaints nor by the failure of therapeutic

TABLE XI. DISPOSITION OF CASES. CERTIFICATE OF DISABILITY DISCHARGE—ALLERGY SECTION FOURTH SERVICE COMMAND

Clinics	S.H.F.	Asthma	Other Cause	Total
Service Command (39)	89	2,724	358	3,171
Air Corps (28)	17	507	47	571
Total for 67 Clinics	106	3,231	405	3,742

DISPOSITION BOARD

	Service Command	Air Corps	Total
Returned to duty	8,266	2,307	10,573
Certificate Disease Disability	3,053	574	3,627

response. It must be stated that in some instances the wheels of administrative procedure turn slowly for discharge from the Army. In spite of this frank admission, these total hospital days represent additional work and detail for the medical officer, additional discomfort to the individual soldier and additional expense to the Government.

In the disposition of an allergic soldier, a board of medical officers considers the severity or persistency of the symptoms, the response to therapy and the professional opinion of the attending medical officer. It has been advisable in the Fourth Service Command to add one other consideration, the importance of which merits special mention and emphasis. A patient whose outstanding military or scholastic qualifications are of particular use to the Army is reassigned to a type of duty compatible with his symptoms and his potential disability. This reassignment is made with the assurance that the attending allergist is competent, experienced and well qualified to extend to that patient the best of care, advice and treatment. Such disposition is productive of dual benefits—the soldier is the recipient of expert allergy management and the Army avails itself of his essential experience and knowledge.

There are instances, of course, where the only correct procedure is the discharge of an allergic soldier. No definite standards can be established upon which such disposition can be determined. The duration, frequency, persistency, severity and etiology of the complaints are variable in the allergic diseases and in the allergic patients. Uncomplicated seasonal hay fever hardly warrants a Certificate of Disability Discharge. Seasonal sneezing, nasal congestion, nasal discharge, and lacrimation were respon-

sible for only 106 disability discharges (Table XI). These cases may have had some complications or the response to therapy may have been discouraging. Bronchial asthma was the diagnosis in 3,231 discharges. In all cases the severity of the symptoms was such that continuation on active duty was an impossibility. It is reasonable to assume that many of these cases should never have been admitted to service with the armed forces. In spite of such an assumption, however, all cases were closely analyzed and investigated in order to assure the correct disposition. Only 405 patients were discharged because of the disabling characteristics of other allergic complaints. Thus, with a total of 3,742 Certificates of Disability Discharge having been ordered because of allergic symptoms, 86.3 per cent were due to bronchial asthma. The significance of asthma is again emphasized by these self-evident tabulations. After appearing before a disposition board, 10,573 allergic patients were retained in service and returned to a type of duty consistent with their complaints.

It should not be expected that therapeutic results in the military management of allergic diseases would equal those obtained in civilian practice. There are many factors in explanation of this viewpoint. Environmental control, comparatively easy and adequate in civilian life, is practically an impossibility in military medicine. A camp or bivouac site may be in the midst of an abundant ragweed growth. A barracks housing thirty to forty men can hardly be prepared in a dust-free or feather-free manner. The suitable application of dietary regimens in the average Army mess is an insurmountable obstacle to proper food elimination therapy. In spite of these factors, satisfactory therapeutic results can be obtained. An indication of such results is offered in reviewing the number of cases that have been discharged from the service and those which have been retained on a duty status. In the sixty-seven clinics included in this report, only 106 patients were separated from the service because of seasonal hay fever. During the same period, 5,373 hay fever patients were receiving pollen therapy. This serves as an indication that specific pollen therapy was surely beneficial to many allergic soldiers. The total figures for bronchial asthma are even more impressive. This diagnosis was recorded for 9,591 patients. Of these, 3,231 were eventually discharged from the Army because of the persistent severity of their symptoms and their failure to respond to the prescribed therapy. Allergy care and management, therefore, can be considered as being directly responsible for retaining 6,360 soldiers on duty. Similar indications of benefits can be derived from a perusal of the number of miscellaneous allergic diseases causing discharges, as compared to the total number of these cases seen in the clinics.

Specific pollen therapy has been instituted upon a pre-seasonal or a seasonal basis. In some few instances, perennial therapy has been suggested, but this, as a rule, has been inadvisable from the military standpoint. Very good results have been obtained with conservative, low-dosage pollen extract administration.

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There has been established a good degree of liaison between the allergy clinics and the induction centers. The decision as to the acceptance or rejection of an allergic applicant is made after the patient has been seen in consultation by the attending allergist. This procedure has resulted in a more correct interpretation of the patient's complaints, a more accurate evaluation of the potential disability and a more acceptable basis upon which to place the rejection or the admission of the allergic inductee.

The Allergy Section of the Surgeon's Office, Fourth Service Command, has been in activation since March 1942. Since that time, 180 medical officers have been trained in the care of the allergic patient and eighty-nine clinics have been established. These clinics are operating as a closely welded unit for the purpose of extending to the allergic soldier the best of diagnostic acumen, care, treatment and disposition.

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DISCUSSION

LT. COL. LOUIS E. LIEDER, MC, AUS, Washington, D. C.: The importance of accumulating significant data on allergic diseases in the military service, so well done by Colonel French and Major Halpin, cannot be overestimated. There has been very little, if any, established precedent to follow in the disposition of allergic patients from military hospitals. This need, to a great extent, is supplied by the careful analysis and interpretation of findings in the Fourth Service Command. Individualization of the patient cannot, of course, be neglected in a consideration of prognosis and disposition of the allergic, but the study conducted by the Allergy Section, Surgeon's Office, Headquarters, Fourth Service Command, gives the medical officers in station and general Army hospitals a working basis for the proper recommendations in disposition of allergic patients.

The large number of both hospitalized and outpatient, duty status allergic patients reported points to the need and importance of proper assignments, especially in general hospitals, of the limited number of physicians trained in the specialty of allergy. This will facilitate the care and proper disposition of allergic persons, reduce the length of hospitalization, and prevent frequent, prolonged and unnecessary rehospitalizations.

Because of the not infrequent transfer of military personnel from one service command to another, a program for expansion of the laboratory facilities for preparation and standardization of allergic extracts, the proper training of medical officers at least in the fundamentals of allergic diagnosis and treatment, and the establishment of allergy clinics for both inpatient and outpatient care, is indicated and necessary. This would prevent unnecessary hospitalization and lessen the non-effective rate considerably, thereby aiding the war effort.

The allergy clinic can act as an invaluable adjunct to the induction station and to the physical examining section in evaluating fitness for overseas duty, for officers' candidate school, and for proper classification of the individual soldier.

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From my point of view in a general hospital, I would like to emphasize the importance of limiting the asthmatic patients, who are not discharged from military service, to the continental limits of the United States. As will be shown in a brief review of 186 consecutively hospitalized asthmatic patients in 1943 at a general

AGE AT ONSET OF ASTHMA

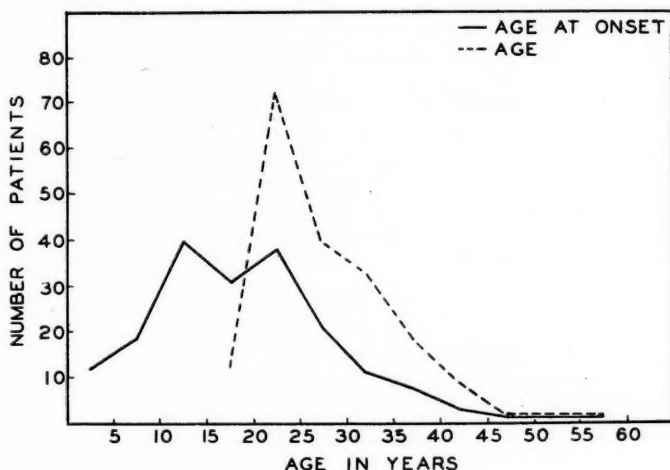


CHART I

hospital, exacerbation, invalidization, and hospitalization in overseas theatres is not uncommon, and the patients must be returned to the one of the interior. Many of our patients who had mild or infrequent asthma in the states were invalidated and unable to carry on with duty within a very short period of time in many of the overseas theatres. The importance of weeding out these soldiers prior to embarkation for overseas duty is apparent.

TABLE I. CASES OF ASTHMA ANALYZED

	No.	%
White	175	94
Colored	11	6
Extrinsic Asthma	141	76
Intrinsic Asthma	45	24
Family History of Allergy	116	62
Total	186	100

As Leopold has pointed out, it is not infrequent to find asthmatic individuals returned from overseas theaters who had never had allergic symptoms in the United States prior to this duty. Preventive allergy screening cannot, of course, be carried out for this group.

Analysis of 186 Hospitalized Asthmatic Patients.—In reviewing 186 consecutive admissions for asthma in Walter Reed General Hospital in 1943, the following information was obtained:

One hundred seventy-five patients (94 per cent) were white and eleven (6 per cent) were colored (Table I). The asthma was extrinsic in type in 141 (76 per cent)

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and intrinsic or bacterial in forty-five (24 per cent). Almost all of the extrinsic asthmatic patients were found to have multiple inhalant sensitivities by intradermal skin tests. A positive family history of allergy was recorded in 116 (62 per cent) of the patients.

The age range of the patients was from eighteen to sixty years with 95 per cent of the group falling in the young adult age group of twenty to thirty-five years, as would be expected in the military service (Chart 1). The age of onset of asthma as shown in the table was most frequent in childhood and decreased rapidly after the age of twenty-five years.

TABLE II. TIME OF ONSET OF ASTHMA

	No.	%
Prior to Military Service.....	140	75
During Military Service	46	25
Total	186	100

Although Mobilization Regulations 1-9 state that asthma of any degree is disqualifying for induction into the army, 140 (75 per cent) of this series of asthmatic patients had the onset of their asthma prior to military service (Table II). Apparently rejection of inductees because of asthma is not being carried out in all cases as prescribed by regulation.

TABLE III. SITE OF ONSET OF ASTHMA

	No.	%
Overseas Onset	29	15
Africa	2	1.0
Bermuda	1	0.5
England	2	1.0
Hawaii	1	0.5
India	1	0.5
Panama	7	4.0
Puerto Rico	15	8.0
United States	157	84.5
Total	186	100.0

Approximately 85 per cent of this group developed asthma in the United States; while twenty-nine patients (15 per cent) had an overseas onset. The exact place of onset is shown in Table III.

TABLE IV. EXACERBATION OF PRE-EXISTING ASTHMA
ON OVERSEAS DUTY

Total Patients	186
Africa	15
Bermuda	1
Egypt	3
England	24
Iceland	1
India	3
Iran	1
Ireland	2
Italy	2
Palestine	1
Panama	10
Puerto Rico	5
Sicily	3
Total	71
Of total patients 38% had exacerbation of pre-existing asthma.	

Asthma apparently is frequently exacerbated by overseas service. Seventy-one patients (38 per cent) of the 186 asthmatic persons studied fall in this category (Table IV). It was especially noted that intrinsic or bacterial asthmatics developed symptoms within a short time after arrival in England. Many were given short trials of duty and required repeated hospitalizations before they were returned to the zone of the interior.

Of the total number of 186 patients, twenty-nine (15 per cent) had their first symptoms of allergy in overseas theatres and seventy-one (38 per cent) had ex-

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acerbation in the overseas theatres (Table V). One hundred patients (53 per cent) of the total hospital admissions for asthma began during or were exacerbated by overseas duty.

TABLE V.

	No.	%
Onset of Asthma Overseas	29	15
Exacerbation of Asthma Overseas.....	71	38
Total	100	53
Total Asthmas Studied.....	186	100

This group of 100 asthmatic patients were analyzed as to the course of their symptoms after return to the zone of the interior, that is, the continental limits of the United States. In 42 per cent the asthma was entirely relieved and they were asymptomatic during their entire period of hospital observation (Table VI). Most of this group were followed for at least two months during which time they were granted convalescent furloughs without having any recurrence of asthma. Thirty-five per cent had mild and infrequent attacks after return to the United States, 21 per cent had moderate asthma, while 2 per cent continued to have severe and frequent paroxysms.

TABLE VI. COURSE AFTER RETURN TO ZONE OF INTERIOR

No Asthma	42
Mild Asthma	35
Moderate Asthma	21
Severe Asthma	2
Total	100

Disposition.—The disposition of hospital patients of any type must depend to a great degree upon the requirements of the military service as well as the medical condition of the men. When limited service as such was abolished in August, 1943, (War Department, Circular Letter No. 161, 14 July, 1943) mild and asthmatic patients as well as other patients with mild or moderate physical handicaps were discharged on a certificate of disability. Then when the manpower problem became more acute and limited duty personnel were needed, mild and moderate asthmatics were kept in the service in restricted capacities conforming to their physical abilities (War Department, Circular Letter No. 293, 11 November, 1943).

Since many asthmatic soldiers and those with other manifestations of allergy are being retained in the military service, an adequate program for their care is essential.

TABLE VII. DISPOSITION OF ASTHMATIC PATIENTS

	No.	%
Returned to Limited Duty.....	91	49.2
Discharged from Service	94	50.8
Total	185	100

Disposition was carefully determined for 185 asthmatic patients excluding a retired sergeant who continued in a retired status. Of these ninety-one (49.2 per cent) were returned to a limited duty status and ninety-four (50.8 per cent) were discharged on a certificate of disability (Table VII).

It is interesting to break down the figures on disposition of the asthmatic patients into (1) those with onset overseas, (2) those with exacerbation overseas, and (3) those without overseas duty (Table VIII). In the first group consisting of twenty-nine patients, twenty-six were returned to limited duty and three were

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discharged, 90 per cent and 10 per cent, respectively. Approximately half of the seventy-one patients with exacerbation overseas were returned to duty. Of the patients without overseas duty, eighty-five in number, only thirty-one (36 per cent) were returned to duty and fifty-four (64 per cent) were discharged from the service.

NUMBER OF ARMY HOSPITALIZATIONS FOR ASTHMA

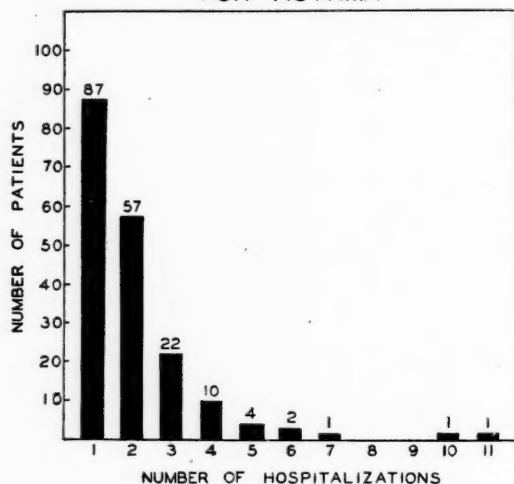


CHART II

Although the number of patients with onset of asthma in the overseas theatres was relatively small, it seems significant that only 10 per cent continued to have symptoms after return to the United States, requiring their separation from the service. It would appear that the prognosis for rapid recovery in this type of case is excellent.

TABLE VIII. DISPOSITION OF ASTHMATIC PATIENTS

<i>Onset Overseas</i>	No.	%
Limited Duty	26	90
CDD	3	10
Total	29	100
<i>Exacerbation Overseas</i>		
Limited Duty	34	48
CDD	37	52
Total	71	100
<i>Without Overseas Duty</i>		
Limited Duty	31	36
CDD	54	64
Total	85	100

In view of the relative frequency of exacerbation of symptoms on overseas duty, it was deemed inadvisable to permit any asthmatic who was returned to duty, to be assigned to overseas duty. They were therefore limited to duty in the continental limits of the United States.

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Because of the frequent history of repeated previous army hospitalizations, an analysis of this point was made. It was found that fifty-seven patients had two hospital admissions for asthma and twenty-two patients had three (Chart 2). One patient had ten and another eleven separate periods of hospitalization. This is another good reason for restricting even mild asthmatics to the continental limits of

LENGTH OF SERVICE PRIOR TO DISCHARGE

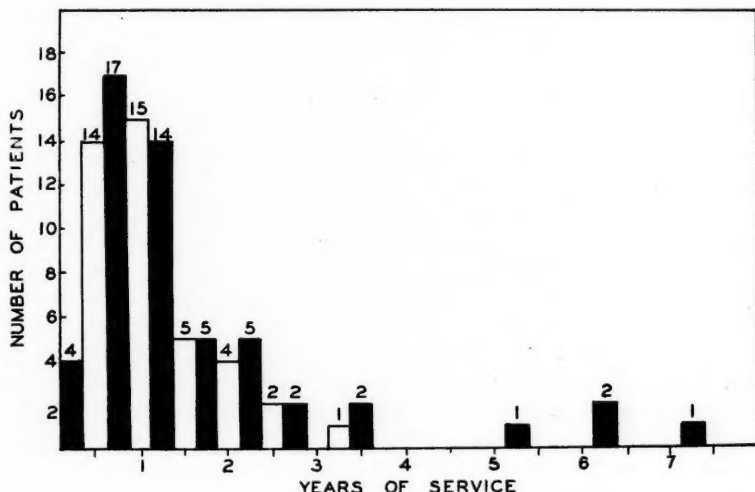


CHART III

the United States. Otherwise, beds needed for combat casualties would be occupied by asthmatic patients.

Moderate and severe asthmatic persons in this series of patients were unable to keep up with the military pace and as noted above were frequently discharged on certificate of disability. How long was it before these patients required and were granted their discharge? Of the ninety-four asthmatic patients discharged, sixty-four were separated from the service within a year and a half.

On the whole, from the foregoing data it would appear that asthmatic persons as a rule do not do well in military service. They are frequently invalidated, require frequent hospitalizations, and after a relatively short period of duty, about half must be separated from military service.

DIAPHRAGMATIC DYSPNEA. Day, Lt. G. H.: J. Roy, Army M. Corps, 81: 290, (Dec.) 1943.

The commonest disorder of the respiratory system in the British Army would appear to be a dyspnea resulting from faulty diaphragmatic function. Symptoms appear late in military training. Physical signs are usually suggestive of "emphysema." Diagnosis is usually made by fluoroscopic examination which shows the excursion of the diaphragm to be slight, absent or paradoxical. Breathing exercises are recommended as therapy.—L.J.H.

ALLERGIC SKIN DISEASES IN THE NAVY

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BECAUSE of the requirements of the Service, the men and women of the Navy form a selected group. This selection tends to reduce the incidence of certain diseases; for example, those of infancy, of old age, many congenital anomalies, et cetera. On the other hand, there are in the Navy, and inherent in Naval duties and occupations, many factors which tend to increase the relative incidence of certain forms of illness. Allergic cutaneous diseases are undoubtedly among the manifestations which might be expected to appear in the Navy in an incidence somewhat higher than that found in the general population. The diets of naval personnel—balanced and excellent as they, of course, are—do not enable an individual to observe the rigorous avoidance of his possible food allergens. Immunizing procedures of proven efficacy, drugs, vaccines and sera given prophylactically must be administered to *every* individual, in order to protect the health of the community, of shipmates and to maintain the fighting efficiency of the Service. And most important of all, the clothing and equipment used and the materials contacted at work must perforce be standardized and of quite constant ingredients. No man on duty can select what he can or cannot wear or use. He must use and wear that which is supplied to him and to his fellows. When a man has the misfortune to be allergic to an item of general issue, it is as a rule utterly impossible for him to even attempt to avoid the offending agent.

The clear realization of this fact and of its full implications highlights two important points in relation to military medicine—and in particular in relation to allergy in the Armed Forces. (1) Every reasonable effort must be made to keep out of the Armed Forces those persons who are known to be allergic or who are likely to become strongly allergic; in other words, to keep the "index of sensitivity" of the personnel as low as possible. (2) Every effort must be made to reduce as far as possible the general distribution and use of any materiel which has a distinct tendency to sensitize and to produce allergic reactions. In other words, items intended for general use and general issue should be rigorously examined for their "sensitizing index" before they are approved and adopted.

Thus clothing, shoes, socks, paints, dyes, cleansers, insect repellents, anti-sunburn creams and lotions, venereal disease prophylactics, innumerable other "issue" materials which contact the skin, as well as numerous items purchasable in the ship's service stores, might well be tested not only for their merits in regard to value, quality, and durability, but also

Presented at the first annual meeting of the American College of Allergists, June 10-11, 1944, Palmer House, Chicago, Illinois. The opinions or assertions contained in this article are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

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in regard to their allergenic nature and capacity for producing contact dermatitis. An efficient method for accomplishing such tests consists in the use of the patch test in the manner which Dr. Adolph Rostenberg, Jr., and I² first described for determining the "sensitizing index" of different agents.

An illustration of the really tremendous role which such elimination or reduction of potential sensitizing agents might play can be seen in the recent report on "Textile Dermatitis" by Davies and Barker.¹ These authors report that during six months there were 670 admissions to the skin wards of a large military hospital, and of these 110 (16.4 per cent) were "wholly or partly due to intolerance by the skin of contact to woollen textiles" (clothing or blankets). Even if these figures appear rather high, no experienced military dermatologist will deny the tremendous role played by clothing and wools in the production of incapacitating skin diseases in the Armed Forces.

Due to the nature of my duties, my own contacts with clinical cases of allergic dermatoses in the Navy have been rather meager during the last two years—and I am certain, therefore, that Dr. Leider, who has consented to discuss my report, will be able to give you a more detailed, personal, and lively exposition—not only of clothing dermatitis, but also of the many forms of allergic dermatoses and the many types of allergens encountered in the Navy.

I shall, therefore, confine myself to the presentation and brief discussion of some figures which I trust you will find interesting and instructive in relation to the nature and importance of allergic skin diseases in the Navy. These figures were assembled for the purpose of this presentation by Lt. (jg) T. D. Woolsey (H)V(S) USNR and Mrs. H. M. Voss of the Section on Vital Statistics, at the request of Captain T. J. Carter (MC) USN of the Division of Preventive Medicine, of the Bureau of Medicine and Surgery, of the Navy Department. I am indebted to them for placing these data at my disposal.

The statistical analysis includes the three years, 1940, 1941 and 1942, and the figures for 1943 insofar as they were available up to May 31, 1944. The incidence and sick days given for skin diseases are likely to be quite accurate, whereas in calculating the figures for allergic skin diseases some rather arbitrary decisions had to be made. Thus, for the purposes of these statistics all cases of "eczema," "dermatitis," "urticaria," "angio-neurotic edema," et cetera, were considered to be "allergic," whereas in point of fact a significant proportion of such cases may not have been on an allergic basis. Moreover, all fungous dermatoses (a very large group indeed) have been included under "allergic." However, there was no way to determine what proportion of these diseases were due primarily to allergy and what to other mechanisms, and I was left no choice but to include the totals. It is, therefore, fair to state that all figures given for allergic skin diseases are surely too high and that they must be discounted

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somewhat, perhaps by as much as 30 to 50 per cent, if they are to represent only allergic skin conditions in the usual and more restricted sense.

Table I gives the new admissions for the groups of diseases under consideration and the total new admissions. "New Admissions" indicates that the patient was never previously admitted to the Naval Sick List because

TABLE I. ALLERGIC DERMATOSES IN THE NAVY

Totals	1940	1941	1942	1943
New Admissions skin diseases	7,993	13,827	33,539	75,363
allergic skin diseases	1,815	3,384	8,875	22,101
all diseases	90,162	136,296	343,996	not available
Sick Days skin diseases	115,153	188,468	398,512	765,386
allergic skin diseases	37,310	64,250	130,195	278,237
all diseases	1,583,335	2,634,326	5,957,371	not available

TABLE II. ALLERGIC DERMATOSES IN THE NAVY

Ratios	1940	1941	1942	1943
New Adm.—skin diseases	8.9%	10.1%	9.7%	not available
New Adm.—all diseases				
New Adm.—allergic skin diseases	22.7%	24.5%	26.5%	29.3%
New Adm.—all skin diseases				
New Adm.—allergic skin diseases	2.0%	2.5%	2.6%	not available
New Adm.—all diseases				

of that particular complaint. Thus, if a man is admitted twice or three times for asthma, he still appears correctly as only one case—his admissions subsequent to the first being classified as "Readmissions" and not included in the table.

The table indicates clearly the growth of the Navy and the corresponding increase in skin diseases and allergic skin diseases.

Table II shows that about one case in ten on the Naval Sick List is admitted because of some skin disease. Of course, many cases of skin diseases are not admitted, but can be treated while the man is on full duties. My own experience indicates that if such minor cases were included, it is conservative to estimate that this would about double the present figures for incidence.

Of the skin diseases admitted to the Sick List about one in four were classified as allergic or possibly allergic. On this basis allergic skin diseases account for about 25 per cent of the 10 per cent incidence of skin diseases—in other words, for about 2.5 per cent or one in forty of all admissions.

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Table III shows that the number of days lost because of skin diseases represents about 7 per cent of the total days lost because of illness. Since the figures for admissions show that about 10 per cent of all admissions are due to skin disease, the 7 per cent figure here suggests that patients with dermatoses may get off the sick list in somewhat less time than does

TABLE III. ALLERGIC DERMATOSES IN THE NAVY

Ratios	1940	1941	1942	1943
Sick days—skin diseases	7.3%	7.2%	6.7%	not available
Sick days—all diseases				
Sick days—allergic skin diseases	32.4%	34.1%	32.7%	36.4%
Sick days—all skin diseases				
Sick days—allergic skin diseases	2.4%	2.4%	2.2%	not available
Sick days—all diseases				

TABLE IV. ALLERGIC DERMATOSES IN THE NAVY

Ratios	1940	1941	1942	1943
EPTE—all skin diseases	2.6%	3.4%	5.0%	4.4%
(EPTE + new adm.)—all skin diseases				
EPTE allergic skin diseases	1.8%	2.9%	5.1%	3.9%
(EPTE + new adm.)—allergic skin diseases				
EPTE—all diseases	8.8%	11.7%	15.7%	not available
(EPTE + new adm.) for all diseases				

the average case. But allergic skin diseases, although having an incidence of about one-quarter of the admissions for all skin diseases, account for slightly over one-third of the sick days for all dermatoses. This suggests that cases of allergic skin diseases stay on the Sick List somewhat longer than the average for other dermatologic cases.

Table IV shows what proportion of the allergic skin diseases admitted to the Sick List were found to have existed prior to enlistment (EPTE). It will be seen that about 3.8 per cent of all skin diseases admitted were proven to have been present before enlistment, and 3.4 per cent of all allergic skin diseases were shown to have existed prior to enlistment. In contrast to this, about 12 per cent of all the cases on the Naval Sick List were there because of illnesses which had existed prior to enlistment. These figures appear to me to be rather noteworthy, since they suggest that among Naval personnel skin diseases and allergic skin diseases appear in a relatively high proportion of individuals who have never suffered from similar complaints before entering the service. In other words, when compared with the general run of illnesses, skin diseases and allergic skin disease are about three times as likely to have their onset at *some time after* entering the Naval service.

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Table V shows the number of cases and the days lost because of asthma, because of hay fever, because of allergic dermatoses and because of skin diseases in general. Here it will be seen that when contrasted with dermatoses and allergic dermatoses, hay fever and even asthma are rather insignificant causes of illness and disability in the Navy.

TABLE V. ALLERGIC AND OTHER CONDITIONS IN THE NAVY

Admissions	1940	1941	1942	1943
Hay Fever	15	53	81	not available
Asthma	108	307	1,176	not available
Allergic Dermatoses	1,815	3,384	8,875	22,101
All Dermatoses	7,993	13,827	33,539	75,363
Sick Days				
Hay Fever	399	1,787	1,534	not available
Asthma	9,788	17,087	52,592	not available
Allergic Dermatoses	37,310	64,250	130,195	278,237
All Dermatoses	115,153	188,468	398,512	765,386

* * *

I believe that the figures presented make it clear that skin diseases, including allergic skin diseases, constitute one of the major problems of military medicine. Much progress has been made through the recognition of this fact by the Medical Corps of the Armed Forces, both during and immediately preceding the present war. The Surgeon General of the Navy and the Research Division of the Bureau of Medicine and Surgery are keenly interested in the subject of dermatoses and allergic dermatoses. This interest has not been only an abstract one, for the Bureau has continued to encourage and approve every reasonable project which promised to advance our knowledge and improve our treatment in this group of conditions.

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2. Sulzberger, Marion B., and Rostenberg, Adolph, Jr.: Some results of patch tests. *Arch. Dermat. & Syph.*, 35:433, (March) 1937.

DISCUSSION

LT. COMDR. MORRIS LEIDER, MC, USNR, Pensacola, Fla.: Commander Sulzberger is one of the easiest persons to argue with, but one of the hardest to refute. Moreover, he invites and encourages disagreement, dispute for the constructive purpose of eliciting other opinion and thus leads to a pooling of thought. Since his paper is largely statistical, I find I could forego the pleasure of the cerebral fisticuffs we usually engage in, thus probably saving myself some figurative black eyes. However, with more foolhardiness than courage, I shall immediately invite an intellectual brawl by some peculiar interpretations of the data presented by Comdr. Sulzberger.

First, I submit the following propositions:

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1. Disease effects based on allergic mechanism are increasing in absolute numbers. This is easy to understand apart from the greater discovery rate resulting from better understanding of allergic reactions in conditions which were previously without known cause. The tremendous increase in gross number and complex variety of industrial agents and consumer goods, the unprecedented relocation of large populations in unusual places and precipitation into novel circumstances, and the unusually rapid tempo of current work and life are factors in an absolute increase of diseases of allergy.

2. Disability from allergic effects in the military group is large, as has just been demonstrated.

3. In general, prophylaxis against disease is more effective, easier, and cheaper in the long run than cure. When it comes to individual cure of established disease versus prevention by a prophylactic technique, preferably a public health measure, the preventive mode wins hands down every time. In all of medicine, I can think of no disease or group of diseases that has been cured out of existence by treatment of every case. All of this is especially true of the diseases of allergy. Therapeutic specifics are unknown and not to be expected of discovery. Successful curative regimes by desensitization procedures are few and irritatingly uncertain. The great hope in the abatement of diseases of the allergic mechanism lies in (a) avoidance of the establishment of the altered, specific reaction-response and (b) avoidance of the offending agent when the altered specific reaction-response has been established. And between (a) and (b), the former is the more desirable solution of the problem; to wit, in general prevent the establishment of an allergic state.

From these three propositions I draw clear conclusions for military medicine, i.e., military preventive medicine only, because opportunities for employing traditional therapeutic modalities for diseases of allergy, even where rarely effective, are hopelessly involved and difficult of exhibition in the Navy. These conclusions are:

1. Common and special military gear, namely uniforms, shoes, hats and helmet linings, sartorial accessories generally, rubber, plastic and metal gadgets ought to be tested as materials and in processing for allergic potential before the quartermaster orders them by the millions. Specialists such as compose this group are proper technicians and authorities.

2. The greatest single class of allergenic substances that causes harm to the soldier population is cosmetics, common hygienic agents like soaps, powders, and dentifrices, and self-applied medicaments. It would profit the military much to develop soaps, dentifrices, powders, shaving preparations, pomades, hair oils and the rest of the peripheral hygienic and beautifying substances—develop such things of minimal allergic potential and distribute them G.I., i.e., gratis or at trivial cost. The promotion of needless, super-civilized beautifying agents by commercial fraud is a barbarism scarcely less than that of the rigors of war. Official indifference to this phenomenon, the plethoric stocking in post exchanges and ship's stores of dozens of brands of metriciously packaged, cheaply scented, irrationally medicated, and overpriced personal articles is to be deplored as wasteful and harmful. The appearance of women in war service is, to my viewing, a desirable and progressive thing, but from their sea chests full of potentially harmful accessories to beauty, it is sometimes hard to remember that there is a hell of a war going on somewhere.

3. An ideal opportunity exists in military medicine for study of allergic phenomena which, it may be seen by the least prophetic, are going to plague the world more than ever as time passes.

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SERVICE ALLERGIES

Offending Agents, Precipitating Factors or Sources of Allergy	Remarks
Common and special military gear Shoes, hats, socks, uniforms, helmets/linings, rubber clothes, plastic and metal accessories, et cetera	Allergic effects are commonly seen but not readily appreciated by allergically unconscious medical officers. Significance lies in obvious sense of testing materials and processes before the quartermaster orders a billion items.
Cosmetics and self-applied external medications. Particularly medicated soaps, sulfa ointments, patent medicines, et cetera	Allergic effects commonly seen. Promotion of needless beautifying agents by commercial ads and official indifference is to be deplored. G.I. issue of tested soaps, dentifrices, powders, shaving preparations, pomades, hair oils, etc., would be profitable.
Agents used in VD prophylaxis Condoms, chemicals	Allergic reactions surprisingly rare or inconsequential (fortunately)
Internal medicaments in legitimate treatment	Allergic phenomena commonly seen but not too rapidly recognized. About the same problem as in civil practice.
Service Chow	Much the same problem as in civil life except less possibility of carrying out reasonable variation.
Immunizing procedures	Allergic phenomena commonly seen from large volume of inoculations done but serious effects rare.
Regional agents and native habits, e.g., insects, fish, animals, plants, native foods	Allergic effects are common and a difficult problem.
Psychic factors: Hostility to rigid discipline, poor morale, strain of military responsibility, tendency to malingering	These factors activate allergic diatheses, precipitate allergic crises and generally mess things up.
EPTE† allergies	Pre-existing allergies tend to be aggravated by the physical and psychological milieu of military service. Adequate medical attention is not provided. On the other hand, some few cases get better, not worse, while in military service.

†Existed prior to enlistment.

In brief then, this war period and its industrial hurly-burly should force an examination of the direction of allergy in the postwar state. Since the number of problems to be solved postwar will be legion, it adds but little to the total burden to consider where and how we needlessly or avoidably make ourselves wretched with allergic discomforts. This is not to say that we need be timid in the development and use of new agents that may enhance human fruitfulness, but it would be well to test and certify materials, processes and uses for their "sensitizing index" before irresponsible commercial and other promotion leads to a rash of rashes.

A NOTE ON CYSTS AND ABSCESES INDUCED IN THE RAT BY THE INJECTION OF OILS. Emery, F. E., and Mathews, C. S.: J. Lab. & Clin. Med., 28:1795, (Dec.) 1943.

Oil (1 c.c.) was injected intramuscularly in hind leg of rat and the site examined two days to one year later for oil, hemorrhage, durability of cyst wall and abscesses. All oils tested (mazola, olive, cottonseed, sweet almond, sesame and peanut) formed cysts. Abscesses were present in nearly one-half the rats injected with sweet almond oil, and in a few with cottonseed oil. Aseptic technique had no bearing on the incidence of abscess. With thickness of cyst capsule as indicator, sesame oil is more irritating than mazola, olive and peanut oils. All four failed to induce gross inflammation. Sweet almond and cottonseed were therefore considered most irritating.

L. J. H.

ALLERGIC OCCUPATIONAL DERMATITIS IN OUR WAR INDUSTRIES

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BEFORE we can proceed with this subject it is necessary to define what is meant by "war industries" and what we shall consider to be allergic dermatoses.

Although almost everything we do is directly or indirectly connected with the war, we shall only consider for the purpose of this paper as war industries, the manufacture of arms, ammunition, airplanes, ships, synthetic rubber, and wearing apparel for the use of our armed forces. The author's conception of allergic dermatoses requires a more lengthy explanation.

DEFINITION OF ALLERGIC DERMATOSES

The chemical causes of occupational dermatoses may be divided into primary irritants and sensitizers.¹

A PRIMARY CUTANEOUS IRRITANT is an agent which will cause dermatitis by direct action on the normal skin at the site of contact if it is permitted to act in sufficient intensity or quantity for a sufficient length of time.

A CUTANEOUS SENSITIZER is an agent which does not necessarily cause demonstrable cutaneous changes on first contact but may effect such specific changes in the skin that, after five to seven days or more, further contact on the same or other parts of the body will cause dermatitis.

A primary irritant has a definite chemical or physical action on that portion of the skin with which it comes in contact. It forms a chemical combination with the skin or abstracts essential ingredients from it, resulting in total destruction, burn, or in inflammation depending on the concentration of the chemical and the period of exposure.

A primary irritant may also be a sensitizer. Exposure to it may so condition the skin that further contact with even such dilute solutions or for such a short time as would not before have caused any trouble, may now result in dermatitis.

Undoubtedly deficiencies in the defense mechanism of the skin renders it more vulnerable to the action of primary irritants. Every one is sensitive to the action of primary irritants, but those having physiologic, anatomical, or traumatically inflicted defects of the skin are hypersensitive. Such a hypersensitivity is not specific and the resulting dermatitis is due to the chemical or physical action of the chemical on that particular portion of the skin. Any other primary irritant may have the same effect. The hypersensitivity is localized to the vulnerable area of the skin. For in-

¹From Dermatoses Section, Industrial Hygiene Division, Bureau of State Services. Presented at the first annual meeting of the American College of Allergists, June 10-11, 1944, Palmer House, Chicago, Illinois.

stance, ammonium nitrate in solution has but little effect on the normal skin, but will attack sites of abrasion. Such a dermatitis should not be called allergic. Dermatitis should only be called allergic if it occurs as a result of an induced generalized sensitivity after a period following exposure to a substance which is not a primary irritant in the concentration to which exposure occurred.

For instance, a wool dyer with apparently normal skin develops dermatitis after exposure for seven days to a dye containing 0.5 per cent of potassium dichromate, and patch tests on distant sites of normal skin with this concentration give positive reactions. Potassium dichromate in strong concentration is a primary skin irritant, but 0.5 per cent will not affect the normal skin.² Therefore, such a dermatitis can be called allergic.

Then again, a worker with tetryl or TNT will work for seven days or more before developing dermatitis, and patch tests on distant sites of normal skin give positive reactions. This is also allergic because neither TNT nor tetryl will affect the normal skin.

Such an induced sensitivity or allergy is specific and present all over the skin. It is not confined to any particular vulnerable area.³ However, it is also true even in allergic dermatitis that open abrasions or sites having thin layers of epithelium may be more sensitive than normal areas of skin.

There is no sensitivity, before exposure, to substances that are not primary irritants, but five days or longer after exposure a certain percentage of those exposed become sensitized. The percentage sensitized is directly proportional to the degree of exposure. For instance, about two per cent of workers handling small tetryl pellets become sensitized and develop dermatitis, whereas, 50 per cent of those working in the tetryl-drying house, where they are covered with tetryl dust, develop dermatitis.

The term hypersensitivity should be used when speaking of primary irritants because every one is sensitive to them. Allergy, or specific sensitivity, should only be applied to induced or acquired sensitivity which becomes manifest after a period of incubation following initial contact. It is present over the entire skin. Allergy is often followed by a hypersensitization or tolerance. This is usually the case when contact with the causative agent is continued for a sufficient period, i.e., long enough for the dermatitis to disappear, two to four weeks.⁴ Tolerance may also follow recovery from the dermatitis even though the recovery occurred after contact with the causative agent was discontinued. The tolerance developed is only to the degree of exposure, i.e., the concentration of the chemical and the amount and duration of exposure to it. Higher concentrations, exposure to greater amounts, or exposure for longer periods of time, may result in a recurrence of dermatitis, followed by again developing a tolerance to the greater exposure.⁵ It requires continuous exposure to maintain the tolerance. The tolerance developed is lost if exposure ceases for a time. The time that the tolerance persists after exposure ceases, varies with the individual. In some cases tolerance lasts only for one or two

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weeks, in others for several months. If there is re-exposure after this period, dermatitis will again occur and tolerance may again be developed.

In cases where tolerance has been present for many years and dermatitis suddenly occurs while there is continued exposure to only the same degree, tolerance does not again develop, perhaps because the immunity mechanism has broken down. Such a worker should be removed from exposure.

Undoubtedly breaks in the defense mechanism of the skin also make it easier for allergens to enter and cause sensitivity. Such breaks may consist of thin layers of epithelial cells, abrasions, deficient or abnormal glandular secretions. After sensitivity is established the eruption may appear at sites other than the site where the allergen first entered, as for instance:

In cases where the allergen causing sensitivity is also taken into the system through the digestive or respiratory organs and deposited in the skin, dermatitis may occur on sites where there has been no contact. In such cases dermatitis may become generalized.

Tolerance is not developed to the primary irritating action of a substance, except insofar as the anatomical and physiological deficiencies of the skin which make one hypersensitive may be remedied, as for instance:

Tolerance may be developed to primary irritation caused by mechanical forces, such as calluses occurring as a result of friction and preventing further irritation, and to physical forces such as actinic rays by tanning and thickening of the epithelial layer thus preventing further damage by the actinic rays.

Now that we have defined our concept of war industries and allergy, we will proceed to describe the allergic dermatoses in our war industries.⁵

EXPLOSIVES

The explosives causing most cases of allergic dermatitis are tetryl, TNT, fulminate of mercury, ammonium picrate, and an explosive known as R.D.X.

Tetryl (Tetranitro-methylanile) is a light yellowish solid. It is a sensitive explosive used in making boosters, fuses, and demolition bombs. It causes a higher percentage of allergic dermatitis than any of the other explosives. From 2 to 50 per cent of exposed workers are sensitized depending on the degree of exposure. More than 90 per cent of those developing allergic dermatitis from it also develop a tolerance, especially if they continue at work. This is proven by the fact that most of the cases occur among new workers and that the incidence of tetryl dermatitis in our ordnance plants has fallen steadily. That recurrences occur when the exposure is increased, was dramatically illustrated in one plant where workers who had developed a tolerance to handling tetryl pellets and TNT were put to work at pouring tetratol bombs, which entails a much greater exposure. After ten days there was an outbreak of dermatitis which in the next four months affected about 300 workers or about 50 per cent of

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those engaged in the operation. They were treated and kept on the job and again developed a tolerance to this greater exposure so that after the fourth month there was only one active case.

Tetryl causes yellow staining of the hands and hair. It causes nosebleed because of congestion of the nasal mucosa. The dermatitis affects chiefly the face, although the hands and arms may also be involved. In severe cases the eyelids are swollen shut. The dermatitis usually lasts for two or three weeks. Treatment of acute cases consists in the application of wet dressings of boric acid or Burow's solution (1-20) until most of the edema subsides, after which boric acid ointment may be applied. Severe cases should be taken off the job, especially while the wet dressings are being applied.

Mild cases should be given a protective application for use on the face and kept at work.* They should be given boric acid ointment to use on the face after work. Most of them will get well while working and will develop a tolerance which usually lasts for two weeks or more after stopping work.

The prevention of dermatitis from tetryl consists of (1) efficient exhausts under dusty operations; (2) clean closely woven coveralls furnished daily; (3) wearing of washable light leather gloves fitting snugly over the wrists to prevent entrance of tetryl; (4) compulsory supervised showers after work. In some ordnance plants new workers are first placed in jobs where there is a minimum contact with tetryl and after two or three weeks they are given jobs involving more contact and so on until they have developed a tolerance to the jobs where there is most contact.

TNT is a yellowish-brown solid and is a nonsensitive explosive used as a bursting charge in shells, bombs, and mines.

TNT causes sensitization dermatitis, but not in as high a percentage of those exposed as does tetryl. It affects chiefly the hands where it causes edema, papules, and deep-seated vesicles, especially on the palms. The wrists and forearms are also affected and sometimes the face. A few cases of generalized dermatitis have occurred in which even the soles were affected. When the dermatitis subsides the skin on the palms desquamates in large flakes.

TNT in the air in the form of dusts or fumes causes a bitter taste. It is absorbed into the system and causes aplastic anemia. In such cases the worker is usually cyanotic with blue lips.

The treatment of TNT dermatitis and its prevention is similar to that described under tetryl except that respirators should be worn on all jobs where there is an exposure to TNT dust or fumes.

*A greaseless application developed by the U. S. Public Health Service was found to give protection to about 25 per cent. of sensitized workers. It leaves a dry adherent deposit on the skin, rendering it difficult for tetryl to get through.

It consists essentially of:

Shellac	12
Carbitol	2
Sod. perborate.....	10
Isopropyl alcohol.....	56
Titan. oxide.....	20

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Fulminate of mercury is a sensitive explosive even more so than tetryl. It is used in detonators and primers. It will cause small ulcers if it enters abrasions, but its chief action is that of a sensitizer. Only small amounts of it are handled and in some places it is loaded while wet, yet dermatitis is of frequent occurrence. It affects the face, where soiled hands touch it and also the arms, especially the cubital spaces.

The treatment and prevention are the same as for TNT and tetryl.

Ammonium picrate and picric acid are used as bursting charges. They cause yellow discoloration of the skin and hair and sensitization dermatitis which usually affects the face.

Dermatitis occasionally occurs among workers handling smokeless powder. It is usually due to sensitization to dinitrotoluol or diphenylamine which smokeless powder contains in small amounts. Dermatitis from lead azide and pentaerythrotol tetranitrate is rare.

There has been a tendency among workers making and loading cartridges to call all skin irritations "brass poisoning." Brass is an alloy of copper and zinc and while it is possible that a rare individual may become allergic to these metals, the large majority of so-called "brass poisonings" are caused by some other substance. Dichromates used to brighten brass, alkaline coolants used in making the cartridges, and zinc chloride used in soldering, are often the causative agents in so-called "brass poisoning."

CUTTING OILS^{6,8}

In the manufacture of large and small arms, the cutting oils and solvents are the principal causes of dermatitis, but these are primary irritants. However, cutting oils especially the insoluble ones, may contain phenolic amines as inhibitors, and as antiseptics, and these sometimes sensitize a worker and cause eczematoid dermatitis, which in no way resembles the cutting oil acnes and the dermatitis caused by the primary irritant action of cutting oils and solvents.

There are, however, certain sensitizing chemicals used as rust preventives to protect bright polished steel pieces, and these often cause allergic dermatitis.

The prevention of allergic dermatitis caused by inhibitors used in cutting oils and rust preventives is to have the workers wear synthetic rubber gloves with impervious sleeves fastened over the gloves at the wrist, and impervious aprons.

Recently we have found that cobalt used in the alloy of which cutting tool edges are made, can cause allergic dermatitis.

We have not observed any tolerance developing in workers affected with allergic dermatitis from cutting oils and rustproofing compounds. This may be because the small amounts of the allergens contained in them are not sufficient to cause desensitization.

In the foundries connected with the manufacture of cannon, tanks, and automotive equipment, allergic dermatitis occurs from resins and oils, especially fish oils used in making molds and cores.

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In the manufacture of airplanes allergic dermatitis^{10,11} occurs from resins and fish oils used as protective coatings for sheets of duralumin and Dow metal while in shipment, and also from the potassium bichromate content of chrome yellow, used as a primer coat on airplane wings and fuselage. The term "dural poisoning" is used by airplane workers to designate cases of dermatitis occurring among them. While it is possible that a rare person may become allergic to the metals in the aluminum alloys, many patch tests on cases of "dural poisoning" performed by the author with duralumin and Dow metal have yielded no positive reaction. "Dural poisoning" is usually caused by some other irritant. In plywood manufacture for airplanes, dermatitis occurs from the synthetic resin glues.

Synthetic rubber: There are many types of synthetic rubber, but at present Buna S is the one principally used by our armed forces. It is made by the copolymerization of butadiene and styrene. Butadiene is made from butylene, an ingredient of crude petroleum. Styrene is made from propane which is also found in crude petroleum.

In the manufacture of styrene there is but little allergic dermatitis. The tertiary butyl catechol used as an inhibitor to keep styrene from polymerizing while being shipped and stored, is a primary irritant and sensitizer. The dermatitis caused by it is usually due to accidental splashes and is caused by primary irritation.

Styrene itself is a primary irritant and sensitizer, and in styrene plants accidental splashes of it may cause primary irritation.

In the polymerization plants allergic dermatitis occurs from sensitization to tertiary butyl catechol, because the exposure in these plants is to great dilution, no more than 10-200 parts per million. Such dilutions are not primary irritants. The same thing is true of styrene, the workers only coming in contact with it in such dilutions in the rubber, as does not affect the normal skin, but sensitizes a small percentage of those exposed.

Other sensitizers in the manufacture of Buna S are the anti-oxidant phenylbetanaphthylamine and some of the coal tar derivatives such as Bardol and Sulfol. All of these chemicals are also photosensitizers.

In the processing plants allergic dermatitis may occur from accelerators and antioxidants as well as from small amounts of unpolymerized styrene remaining in the rubber and given off as a vapor when the rubber is heated in the mix mills.

SHIP BUILDING

In the building of ships allergic dermatitis may occur from molds, cores, oils, and paints, as described above.

FABRICS

Fabrics used by our armed forces often require special dyeing and finishing. In plants making woolens, where the dyeing formerly was done with 0.5 per cent of potassium dichromate as a mordant, the government

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specifications called for 3 per cent and the old workers who had developed a tolerance to 0.5 per cent broke out with dermatitis soon after 3 per cent dichromate was used. Most of them again developed a tolerance to the 3 per cent.

Some of the fabrics must be finished with mildewproof and waterproof chemicals. All the mildewproof chemicals are primary irritants in strong concentration, and many are sensitizers in even such low concentrations as .2 per cent. Allergic dermatitis has occurred among workers sewing and handling fabrics processed with certain antimildews.

Japan wax made from a member of the Rhus family, and used as a waterproofing material on fabrics, caused allergic dermatitis among workers sewing the fabric.

Allergic dermatitis may also occur from some flameproof chemicals used in fabrics.

The diagnoses of all occupational allergic dermatitis is made by considering the occupational history, knowing the sensitizing properties of the chemicals occupationally encountered and the performing of patch tests.

The history must show that the dermatitis occurred after the lapse of a period of incubation, following contact with the substance. This period of incubation is at least five days or longer. Inquiry should show that not all the workers similarly exposed were affected. This shows that the substance is not a primary irritant. The sensitizing properties of the chemicals which the workers contact should be ascertained. Patch tests performed with the actual substance suspected of causing the dermatitis should be performed in proper dilutions on those affected, as well as on controls. The substance causing allergic dermatitis should show a positive reaction on those affected while the eruption is active, and a negative reaction on the controls. If the controls also react, the substance is a primary irritant.

SUMMARY

Allergic occupational dermatitis occurs more frequently in the manufacture of munitions than in other war industries.

Tolerance develops in most workers who develop allergic dermatitis, if they are treated while working.

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DISCUSSION

SAMUEL M. PECK, Sr. Surgeon (R) USPHS, Bethesda, Md: The attention of dermatologists and allergists has been drawn to the role of allergy as a cause of industrial dermatitis to such an extent that too often they have lost sight of the fact that less than 20 per cent of all occupational skin diseases are due to sensitizers.

It is obvious from Dr. Schwartz's paper that a state of hypersensitivity in the broad sense may exist as far as skin reactions to chemical irritants are concerned which is not on an allergic basis. This more susceptible state of the skin to injury by primary irritants is due to differences in natural, anatomical and physiological barriers to the action of these irritants in different individuals.

Such natural protective barriers are the thickness of the keratin layer, the amount and constituents of the lipoids covering the skin surface and the pH of the skin surface. The presence of breaks in these barriers which are caused by direct injury and the action of chemical and physical agents play a role in the production of dermatitis of industrial origin whether it is due to a primary irritant or a sensitizer.

In order to induce an allergic contact dermatitis an intimate contact between the allergen and the living cells of the epidermis is necessary. Any factor or factors which tend to facilitate such contact play an important role in the production of the allergic state. Thus the properties of the allergen as far as its capabilities of passing through the natural barriers of the skin is concerned, and the action of environmental factors which destroy these natural barriers must be understood in order to control and prevent outbreaks of industrial dermatitis.

Electrolytes are poorly absorbed, if at all, through the intact epidermis and only small amounts are absorbed through the skin appendages. For this reason such factors as tiny wounds and scratches, friction, maceration of the skin, exposure to strong alkalies and fat solvents, and many other such moments which help absorption of the electrolytes by removing the natural barriers account for the sensitization to them.

These contributory factors to the development of the hypersensitivity state play an especially important role in the development of industrial dermatoses. A study of the dermatitis due to zinc chromate (i.e., potassium dichromate), cobalt, and other such chemicals clearly indicate that a factor such as friction places an important role in the development of sensitivity to them. Substances which are water and lipid-soluble are absorbed more readily than electrolytes through the intact epidermis and the skin appendages. Prolonged contact with such chemicals in an industrial process often lead to the development of cases of allergic dermatitis. Such an instance was brought out in a study of dermatitis due to carrots.[†] The causative agent was both ether and water soluble.

Fat solvents play an important role in the production of dermatitis due to primary irritants and sensitizers. By removing the surface fats, they eliminate one of the

[†]Peck, Samuel M., Spolyar, Louis W., and Mason, Howard S.: Dermatitis from carrots. *Arch. Dermat. & Syph.*, 49:266-269, (Apr.) 1944. Reprints.

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natural protective barriers. In addition, they attack the phospho-lipid membrane around the living cells and thus facilitate penetration of chemicals into the cells.

Some insight on the localization of dermatoses in general has been gleaned from a study of the localization of industrial dermatoses. Here again, the localization depends on contact between the chemical and the living cells. The dermatitis first occurs at places where there is the greatest concentration of the chemical in contact with the living cells.

It is for this reason that industrial dermatoses are most often seen on uncovered areas of the body and in areas especially exposed to friction. If the exposure to the chemical is the same all over the body the localization of dermatitis will depend on the thickness of the epidermis, especially the keratin layer, the amount and the constituents of the lipoids on the skin surface, etc. It is in this way that friction by bringing about more intimate contact of the chemical in greater concentration for a given length of time determines many of the localizations of industrial dermatoses, whether due to primary irritants or sensitizers. However, in cases where we have extreme sensitivity or the dissemination of the allergen takes place through the blood stream, and some allergen reaches the skin, the anatomical and physiological barriers play a more minor role and we get a widespread distribution of the eruption.

Our experience with the results of patch tests and a consideration of the preceding discussion makes one skeptical of the existence of the so-called localized sensitivity. It is usual to base conclusions on the existence of the local hypersensitivity from the observation that a dermatitis repeatedly appears on the same area of the skin and the fact that patch tests performed with a given concentration of the allergen are only positive in and around the area where the dermatitis occurs. Unless the localized area of dermatitis is due to a hematogenously disseminated allergen, the diagnosis of local hypersensitivity must be reviewed with consideration for the variation of the physico-chemical barriers in different areas of the body. Given the same degree of sensitivity over the entire body, patch test reaction can be elicited in the same period of time only over areas of skin which resemble each other in the thickness of the epidermis, in the lipoids on the skin surface, et cetera. After such considerations and the illustrations in Dr. Schwartz's paper, it can be readily seen that differences in hypersensitivity of the skin on a non-allergic basis may well explain the localization of a dermatitis due to a sensitizer.

Several illustrations can exemplify the reasons for the localization of a dermatitis even though there is a generalized sensitivity. TNT dermatitis is usually seen on the palms. Most cases of allergic contact dermatitis are seen on the dorsum of the hands while the palms remain unaffected. This is due to the fact that in most instances, while chemicals are probably contacted by the palmer surface of the hands more often than other areas of the body, yet because of the continuous perspiration which occurs on the palms and soles and on no other parts of the body, the chemicals are constantly being removed; in addition, the palms are covered with a relatively thick keratin layer.

One of the characteristics of TNT workers is the yellow stain of the skin of the palms. This indicates that the chemical is not being washed off by the perspiration and eventually penetrates to the living cells and sensitizes them. It is not infrequent also to see the localization of dermatitis due to fumes and dusts on the eyelids because the keratin layer is very thin there and the constant movement of the eyelids promotes friction. Another example of the reason for the localization of the dermatitis is the observation that workers sewing cloth impregnated with anti-mildew usually develop their dermatitis on those portions of the forearms where they are exposed to the greatest friction and thus indicate contact with the impregnated fabric. The sensitivity to the anti-mildews is present all over the body.

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ALLERGY IN RELATION TO THE GENITO-URINARY TRACT

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THE purpose of this paper is to discuss allergy as related to the genito-urinary tract and to present case histories which either substantiate or suggest the existence of certain allergies. The parts of the genito-urinary tract will, therefore, be considered as shock organs in an allergic response. Allergic manifestations involving the genito-urinary tract are not common, but the infrequency of occurrence does not deny their existence nor minimize their importance. A diagnosis of genito-urinary allergy is made only by exclusion.

REVIEW OF THE LITERATURE

The extensive smooth muscle and mucous membrane surface of the genito-urinary system make it an ideal shock organ for an allergic reaction. It has been demonstrated experimentally that smooth muscle spasm occurs in the bladder and uterus when specific allergens are injected into previously sensitized animals. Manwaring and Marion¹⁴ presented proof that bladder allergy does exist and substantiated their evidence by the production of an allergic reaction in rabbits.

Duke⁶, who placed great emphasis on possible allergic reactions in the genito-urinary system, reported the occurrence of bladder symptoms as related to food allergy in the absence of a pathologic condition or in the presence of a minor pathologic condition in the urinary tract. The most common symptoms were bladder tenesmus, painful urination, varying degrees of pain with soreness over the bladder, and polyps from chronic allergic edema. "There are some patients who suffer frequent painful urination with constant pain over the bladder, out of all proportion to lesions found after careful examination by internist, urologist, and roentgenologist. They are treated under various diagnoses, but the symptoms continue as severely as before. These symptoms have been proven definitely in certain cases to be due to hypersensitiveness to certain foods."

Osler¹⁶ in 1895 reported cases of glomerulonephritis attributable to Henoch's purpura of long standing. Alexander and Eyerman² considered this condition to be due to an underlying allergy. Thomas and Forsythe reported a patient having hematuria with a diagnosis of allergic purpura due to tar fumes.²¹ Since 1937, Rowe⁷, Tufts²³, Vaughan²⁵, and Urbach²⁴ have considered the question of genito-urinary allergy. Ur-

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bach, especially, related allergic manifestations to symptoms in different portions of the urinary tract. He supported his thesis with references to experimental evidence and the work of other investigators.

Schultz¹⁸ used strips of sensitized intestinal smooth muscle and found that contact with the specific antigen caused an anaphylactic response with muscular contraction. Dale improved Schultz' technique and developed the uterine strip procedure, which has since become routine in the study of sensitization. The Schultz-Dale reaction of increased contraction of intestinal and uterine smooth muscle is probably the same as the reaction of smooth muscle seen clinically in asthma and urethral and bladder hyperirritability, as well as allergy involving the gastro-intestinal tract. Manwaring¹⁵ and others demonstrated definite uterine and bladder contractions produced by injecting horse serum into previously sensitized dogs.

Discussion as to the advisability of treating pregnant women with pollen hyposensitization arises from the fact that an overdose of pollen extract may produce a reaction in the uterus as a shock tissue. The subject was considered in some detail in the International Correspondence Club of Allergy. Pregnancy, however, is usually no contra-indication to treatment. A similar uterine reaction may be present in certain cases of essential dysmenorrhea. Smith¹⁹ reported twelve cases which responded to allergy management.

Bacterial sensitization occurs in various organs of the genito-urinary tract, especially the kidney. Strong and Fenner¹³ perfused kidneys of the tuberculous guinea pig with tuberculin and found marked coagulation and ptosis of the glomeruli and tubules four days later. Controls did not show this change. They also injected tuberculin directly into the kidneys of tuberculous animals and produced necrosis, whereas in the controls the only change was hemorrhage from trauma of the needle.

Bray⁴ reported successful relief of enuresis in 100 cases with treatment based on allergy. Patients with associated allergic manifestations such as asthma, hay fever, or eczema were treated for these symptoms as well as for the enuresis. Patients with co-existing conditions which proved to be allergic in origin improved upon removal of the offending allergen. Patients with enuresis *per se* were improved by the removal of an incriminated allergen, although they had failed to respond to the routine management of enuresis. Bray offered evidence in support of the rationale of treatment by drawing an analogy between the nerve supply of the bronchial and vesical musculature. "The analogy between enuresis and allergic conditions in general does not cease with a similarity in innervation of the affected organs. Both conditions tend to recur in bouts with intervals of apparent freedom, both tend to be worse at night, both tend to be accentuated by fatigue or worry, possibly due to sympathetic exhaustion, and both commonly clear up on admittance to hospital."

Vaughan and Hawk²⁶ reported the case of a medical student, aged

twenty-five, who had recurrent attacks of hydrarthrosis and attacks of renal colic, the latter being promptly relieved by adrenalin. Roentgenograms of the urinary tract showed no abnormal findings. The diagnosis was urinary retention due to urethral obstruction of allergic origin (angioneurotic edema).

In the literature reports may also be found of vaginal discharge with a high eosinophil count¹⁰, abortions following constitutional reactions to treatment⁸, severe menorrhagia during pollen therapy²⁰, pruritus vulvæ during the pollen season⁹, hematuria and purpura with nitrogen retention from sensitivity to onion¹, constitutional reaction and vaginal bleeding from an overdose of antigen^{5,11,12}, and paroxysmal hemoglobinuria in a patient with cold urticaria.³

Allergic reactions involving the external genitalia, the vulva, penis, vagina, and anterior urethra, are frequently seen following medication and the use of contraceptives, including creams, jellies, condoms, and so forth. Dermatologic involvement of the genitalia is more closely related to contact factors or agents, which is a subject in itself.

DIAGNOSIS

The symptomatology of genito-urinary allergy includes most of the complaints occurring in more common genito-urinary diseases, such as frequency, burning urination, tenesmus, nocturia, enuresis, ureteral colic, dysmenorrhea, leukorrhea, and vulvar irritation. That such symptoms can be allergic in origin is not commonly appreciated, and the cause of such symptoms is often unrecognized.

The diagnosis of genito-urinary allergy depends essentially on an awareness that such a condition may exist. In comparison with pyelitis, cystitis, calculi, and specific infections, genito-urinary allergy is rare, and the diagnosis can be made only after x-ray study, urinalysis, cystoscopy, and other procedures have ruled out the more common causes. In essential hematuria not only must urologic findings be negative, but vitamin C deficiency and purpura must be ruled out before genito-urinary allergy can be considered.

A family history of allergy is also contributory. Complete sensitization studies by scratch and endermal methods should be carried out in an effort to detect the offending allergens. Elimination diets may also be of value.

Eosinophils in the urine are frequently found but not consistently observed in genito-urinary allergy, especially when bladder symptoms are prominent. Relief by the administration of adrenalin is a valuable diagnostic procedure in some cases. Finally, the diagnosis of genito-urinary allergy is made only by exclusion, by therapeutic trial with control of symptoms, and by reproduction of symptoms by subsequent exposure.

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CASE REPORTS

Case 1.—Hematuria associated with food and inhalant allergy.—A white man, aged fifty-two, complained of headache and gross hematuria of fifteen months' duration, during which time he had several attacks of severe pain in both flanks. Nocturia had occurred on several occasions, but there was no history of renal calculi nor other genito-urinary symptoms. Repeated urologic investigations failed to explain the hematuria.

While headache was the only personal history of allergy, there was a strong family history of migraine. Laboratory findings were consistent with those to be expected in gross hematuria: red blood cell count was 3,990,000 per cu. cm. with 55 per cent hemoglobin; reticulocyte count was 1.4 per cent; platelet count was 240,000 per cu. mm., coagulation time ten minutes and bleeding time two minutes; prothrombin time nineteen seconds (normal twenty seconds); clot retraction was normal. Cystoscopy revealed gross blood in the urine coming from both ureteral orifices. Catheters were passed to both kidney pelves without resistance. Pyelogram was normal. Sensitization studies showed significant reactions to a number of the common inhalants and molds and to certain foods, including mushroom, squash, pumpkin, canteloupe, cucumber, and watermelon. The patient was advised to remove the offending foods from his diet and to follow a strict inhalant avoidance regimen. Hyposensitization with an extract of house dust, feathers, orris root, and mixed molds was initiated. Within ten days the patient's symptoms subsided, and at the end of four months symptoms had not recurred.

Case 2.—Frequency and painful urination caused by paint fumes.—For many years the patient had complained of bladder symptoms such as frequent urination whenever he painted in a closed room. His nasal mucous membranes were also excessively irritated under this condition. Painting out of doors did not produce such symptoms. As a young man he had recurrent hives and developed a sulfur dermatitis while under treatment for scabies. There was a positive family history of allergy. Avoidance of painting within doors or in a closed room controlled his symptoms satisfactorily.

Case 3.—Dysuria and cystitis from paint fumes.—A similar case was that of a patient with perennial allergic rhinitis and bronchitis who gave a history of dysuria and cystitis whenever he came in contact with paint fumes. Avoidance was the only treatment necessary for the control of symptoms.

Case 4.—Frequency and nocturia resulting from food sensitivity.—A twenty-eight-year-old physician sought allergy consultation for a nasal allergy, allergic conjunctivitis, and recurrent episodes of urinary frequency, nocturia, and dysuria. He believed that his symptoms were aggravated by the ingestion of eggs and beer. As a youth he had recurrent urticaria. His father had a chronic catarrh and a questionable migraine. Positive reactions were obtained from eggs, asparagus, hops, yeast, kidney beans, and coffee. By the elimination of these foods from his diet, his nasal symptoms and conjunctivitis were improved, and his bladder symptoms cleared entirely. Reexposure would produce recurrence of his ocular, nasal, and bladder symptoms.

Case 5.—Trigonitis aggravated during an allergic episode.—In this patient a trigonitis was definitely worse with perennial allergic rhinitis. Many reactions to foods were found by sensitization studies. A complete allergy and urologic survey was made. There was no follow-up.

Case 6.—Leukorrhea associated with allergic rhinitis.—A school teacher, aged thirty-nine, complained of intermittent nasal obstruction with watery rhinorrhea

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and a profuse mucoid postnasal discharge. The nasal symptoms were perennial and at times were acutely exacerbated. A profuse vaginal discharge was definitely associated with the recurrent nasal symptoms and partially disappeared between attacks.

The nasal mucous membranes were typically allergic with edema, pallor, and watery rhinorrhea. Pelvic examination revealed a whitish vaginal discharge. A 6 per cent eosinophilia was the only significant laboratory finding, and examination of the vaginal secretion during an episode of leukorrhea revealed numerous eosinophils. Sensitization studies revealed significant reactions to many inhalants and to certain foods, primarily eggs and wheat. The nasal symptoms and leukorrhea responded favorably to dietary restrictions, to the avoidance of inhalants, and hyposensitization. The patient voluntarily discontinued her program after four months with the consequent return of her major complaints one month later as severely as before. Treatment was again instituted, and the symptoms were controlled.

Case 7.—Frequency, tenesmus, and cystitis related to a food allergy.—A woman in her thirties complained of frequent micturition in attacks recurring at two-week intervals. Symptoms lasted for one day. She said that her bladder felt full and swollen and that she passed considerable urine. She also had allergic rhinitis and bronchial asthma. Corn and celery caused bladder symptoms, and heartburn resulted from the ingestion of lamb, carrots, lettuce, corn, and eggs. The same allergens caused rhinitis. The family history of allergy was very strong. Complete genito-urinary studies were normal. Symptoms were controlled by allergy management.

Case 8.—Seasonal leukorrhea associated with ragweed hay fever and asthma.—The patient, aged fifty, gave a history of hay fever, rhinitis, hives, asthma, and vaginal irritation and watery leukorrhea of many years' duration. She was absolutely free of leukorrhea except during the ragweed season. Contact with dust caused rhinorrhea throughout the year. A black silk dress was known to cause hives. The odor of perfume caused spasmodic attacks of rhinitis, which were usually followed by asthma.

She gave positive reactions to scratch tests with ragweed pollen and to conjunctival tests with serial dilutions in carbolized saline. A small amount of pollen was applied to the posterior wall of the vagina and observed for 15 minutes; a definite reaction characterized by increased redness and puckering of the mucous membrane was localized to the site of the application, and there was a definite increase in watery discharge from the cervix. Smears showed no eosinophils. The test was observed by a gynecologist, who concurred in the report of the positive and significant reaction. The patient was started on ragweed hyposensitization.

Case 9.—Uterine spasm as part of a constitutional reaction to preseasonal ragweed treatment.—A nulliparous young woman with a ten-year history of typical ragweed hay fever had experienced no reaction from previous pollen hyposensitization, which was begun during the winter months. Ten minutes after a dose of 0.45 c.c. of a 1/5000 solution of mixed ragweed extract she developed severe lower abdominal cramps, similar to menstrual cramps. Profuse perspiration, flushing of the skin, and generalized urticaria followed. The reaction was controlled by hypodermic injections of epinephrine, and a tourniquet placed above the site of the injection. The patient's next menstrual period began three days early, and the flow was scanty. The second period was ten days late. After this, however, her menstrual cycle returned to its usual and regular twenty-eight-day cycle. A second constitutional reaction of urticaria followed a dose of 0.3 c.c. of the 1/50 solution of ragweed pollen, but there was no uterine cramping.

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Case 10.—Dysuria and tenesmus following the ingestion of aspirin and acid fruits.—The patient took aspirin occasionally for severe headache. The drug caused definite burning on voiding, and the amount of urine was reduced. Symptoms lasted twenty-four hours. Acid foods, including citrus fruits, tomatoes, and strawberries caused similar symptoms. No pathologic condition of the urinary tract was found by the urologist.

Case 11.—Vesical sphincter spasm following the use of ephedrine.—A white man in the fifties with severe bronchial asthma was given ephedrine for control of symptoms. Each dose of the drug caused spasm of the sphincter and severe bladder discomfort. He voided in small dribbles while under the influence of the drug. Hypodermic administrations of adrenalin were substituted for the ephedrine and produced no symptoms.

Case 12.—Allergic purpura with associated hematuria precipitated by the inhalation of tar fumes.—A sixteen-year-old white boy had recurrent hemorrhagic areas in the skin. Six months previously he was exposed to tar fumes in high concentration for two days. The patient had chewed tar frequently as a child. Symptoms appeared four days after exposure and were characterized by severe cramping in the legs, which was followed by nausea, vomiting, and melena. He had repeated attacks of nausea, vomiting, bloody diarrhea, and hematuria. He had swelling of the face and feet, joint pain, occasional hives, and recurrent crops of petechiae. Pitting and edema were present in the lower extremities, and there was pallor of the skin and profuse sweating. A diagnosis of chronic nephritis was made, and albuminuria persisted for several months. Blood studies were negative.

Allergy studies revealed positive patch tests to crude coal tar ointment. A program of hyposensitization and avoidance of food and inhalant allergens was instituted. Purpuric lesions began to subside after treatment was instituted and did not recur. After nine months of treatment the patient had gained 50 pounds and was in excellent health.

These hemorrhagic tendencies have a mechanism similar to that of anaphylactic shock, characterized by increased capillary permeability, impaired coagulation of blood, and increased permeability of membranes. This is the same type of reaction which Renshaw and Thomas²² described. By proctoscopic examination they were able to observe congestion and injection of vessels of the rectal mucosa when an allergen was brought in contact with the mucous membrane. The application of ragweed pollen extract to the mucous membrane of a pollen-sensitive patient caused a marked increase in capillary engorgement, even to the extent of rupture and hemorrhage. The absorption of the ragweed pollen was followed by bronchial asthma.

Another patient who complained of seasonal asthma and fall hay fever had severe burning and pruritus of the rectal anus, which was associated with high doses of pollen extract and also occurred in the height of the ragweed season. At one examination mucus was found draining from the rectum. There was no external pruritus ani. The patient showed a 3 plus reaction to a patch test with ragweed.

Case 13.—Hunner's ulcer with associated hives aggravated by foods.—This patient developed dysuria five years previously after a four-day attack of generalized hives. Dysuria and frequency of urination were recurrent. Cystoscopy revealed an ulcer near the dome of the bladder. An increase in frequency of urination and dysuria followed the ingestion of chocolate candy or canned grapefruit juice. There was no gross hematuria. She had migraine in 1923 and reported a definite family history of allergy.

The final diagnosis of genito-urinary allergy was based on a questionable allergic

GENITO-URINARY TRACT—THOMAS AND WICKSTEN

factor in her bladder symptoms, a history of urticaria, and a questionable allergic factor in her headaches. After six weeks' treatment by avoidance of incriminated foods and inhalants and hyposensitization with stock rhinopathogen and enteropathogen vaccines the patient's doctor reported that she appreciated a definite relief from her symptoms.

TREATMENT

The treatment of genito-urinary allergy, as of any other allergy, is essentially the removal of all offending allergens. Their elimination should be based on complete sensitization studies for foods, inhalants, bacteria, molds, and any other contactants. Foods are the most common offenders, particularly wheat, eggs, and milk, although Rowe has stated that any food may be an offender. The patient should be impressed with the importance of complete elimination of all foods which give positive or even borderline reactions. If results are not obtained by diet based upon sensitization studies, strict elimination diets should be considered. A food diary may be of definite value.

Inhalants may be causative factors, and strict avoidance is imperative. Drugs which may be allergens should be entirely eliminated. Treatment of coexisting allergic manifestations is important. Close co-operation between the urologist and allergist is desirable. Until the symptoms are adequately controlled, sedatives, antispasmodics, anodynes, adrenalin, atropine, and similar drugs may be prescribed for the relief of pain.

SUMMARY

Allergy definitely must be considered as a cause of genito-urinary symptoms when they cannot be attributed to other causes, when they can be produced at will by the inhalation or ingestion of proven allergens, and when they can be controlled by withdrawal of the allergens. These symptoms may include frequency, painful urination with burning, tenesmus, nocturia, enuresis, ureteral colic, dysmenorrhea, leukorrhea, vulvar and genital irritation, and uterine contractions to the extent of terminating a pregnancy.

The rarity of genito-urinary allergy is understood, and evidence should be carefully weighed before a definite diagnosis is made. The diagnosis is substantiated by other frank allergies in the personal and family history, but it should be made only by exclusion and after therapeutic trial. The cases presented offer substantial evidence of genito-urinary allergy as the explanation of the symptomatology.

The possibility of an allergic reaction in the genito-urinary tract must be considered in the treatment of pregnant women. Reactions to serum or ragweed hyposensitization may cause abortions or premature labor.

Experimental work substantiating the fact that the tissues of the genito-urinary tract manifest a frank allergic or shock reaction is cited.

Close co-operation of the allergist and urologist is necessary if genito-urinary allergy is to be ruled out or, if proved, to be properly managed and results obtained.

SUMARIO

La alergia debe ser considerada definitivamente como causa de síntomas genitourinarios cuando ellos no se pueden atribuir a otras causas, especialmente cuando se pueden producir a voluntad inhalando o ingestiendo alérgenos conocidos o probados, y también cuando ellos pueden ser reprimidos por el retiro de los alérgenos causantes. En estos síntomas se puede incluir frecuencia, disúria con inflamación, tenesmo, nocturia, enuresis, cólico ureteral, dismenorrea, leucorrea, irritación de la vulva y genitalia, y contracciones del útero hasta el grado de producir un aborto o de terminar la preñez.

La rareza de la alergia genitourinaria es bien sabida y la evidencia debe ser bien examinada antes de llegar a una precisa diagnosis. Se establece la diagnosis por medio de otras manifestaciones alérgicas, en el propio enfermo, existiendo ahora o antes, y también por la presencia de alergia en los antecedentes. Pero, más se hace la diagnosis por medio de la eliminación y los ensayos terapéuticos. Los casos presentados ofrecen una evidencia substancial de alergia genitourinaria como una explicación de la sintomatología.

La posibilidad de una reacción alérgica en la región genitourinaria debe ser considerada en el tratamiento de las mujeres preñadas. Reacciones al suero o a la hiposensibilización de las ambrosias pueden producir abortos o partos prematuros.

Se ha citado el trabajo experimental estableciendo el facto que los tejidos de la región genitourinaria manifiestan una verdadera reacción alérgica o de choque.

Es muy necesario que el alergista y el urologista estén de acuerdo, y que haya una cooperación completa entre ellos, si la existencia de la alergia genitourinaria va a ser considerada. En ella los resultados pueden ser buenos cuando se ha probado que los casos fueron bien estudiados del punto de vista urológico y alérgico.

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CLINICAL EVALUATION OF SOY BEAN FOOD IN ECZEMA OF THE CHILD

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THE care of eczema or atopic dermatitis of the infant and young child always has been a difficult problem. Many papers concerning the disease are on record but there has been a great deal of repetition with an occasional variation when some writers have emphasized certain therapeutic procedures. For many years the eczematous children attending the University and Minneapolis General Hospital allergy clinics have received treatment based on the most popular methods of the day.

The dermatologists have made various contributions to the clinics. Practically all forms of external therapy were tried. However, the response has not been consistent. Some children were observed for a long time and although the eczema appeared to be fairly well controlled, skin manifestations were present until nature decided to clear up the disease spontaneously.

Careful cleansing of the skin, the reduction of trauma by the use of restraints and the administration of sedatives were added to the treatment. Contactants such as wool and silk were avoided. While the results were not satisfactory when fairly large groups of infants and young children with eczema were treated, an occasional case responded well enough to warrant continuation of some form of external therapy.

The pediatricians have urged that the clinic physicians make use of special elimination diets for the cases of eczema. Eggs were removed but this was not enough. Even in those children in which there was evidence that the ingestion of this food had caused flare-ups in the condition of the skin, the elimination of eggs did not lead to a disappearance of the eczema. Milk then was considered as a possible offender. The complete removal of this food from the diet was difficult since it usually constituted a large portion of the daily intake of food for the young child. Rather than eliminating the milk, attempts were made to alter it in such a way that it was less allergenic. First, the milk was boiled and later it was found that it would be simpler to use unsweetened evaporated milk. From this preparation, there was a tendency to drift in the direction of more special preparations, some of which have been referred to as hypoallergic milks. Although these products were not satisfactory in many cases of eczema, enough patients responded favorably to continue the interest in heated milks. Occasionally, goats' milk was employed when the hypoallergic milks failed to produce any

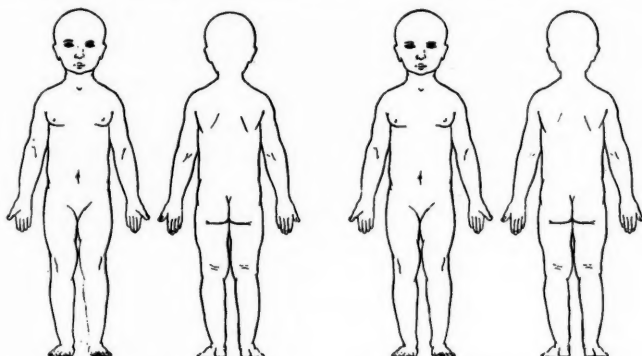
Presented at the First Annual Meeting of the American College of Allergists, Chicago, Illinois, June 11, 1944.

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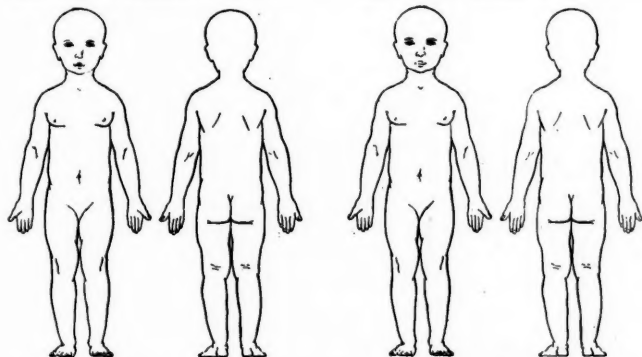
UNIVERSITY OF MINNESOTA
University of Minnesota Hospitals Department of Pediatrics
PROGRESS RECORD OF ECZEMA CASES *

Case No. _____ Name _____ Age _____ Sex _____ Diagnosis _____



Date _____ Examiner _____

Date _____ Examiner _____



Date _____ Examiner _____

Date _____ Examiner _____

KEY: C, crusts; E, erythema; P, pustules; S, scabberhea; T, thickening; V, vesicles; W, weeping;

* Designed by Dr. Arild E. Hansen, University of Texas.

CHART I

improvement. The response was good and most interesting was the observation that after the eczema improved with the use of goats' milk, the return to cows' milk promptly led to an increase in symptoms.

For a short period of time a preparation containing meat and vegetable proteins was given to infants and young children with eczema in place of milk. There were some good results but reactions did occur. However, the plan to use a vegetable protein was a good one and suggested the use of a milk substitute made entirely from a vegetable. It was found that soy bean furnished in suitable concentration all the amino

SOY BEAN FOOD—STOESSER

UNIVERSITY OF MINNESOTA HOSPITALS		Department of Pediatrics		PROGRESS RECORD OF ECZEMA CASES	
Case No.	Name	Age	Sex	Diagnosis	
Clinical data		Date:			
Location	Scalp				
	Face				
	Neck				
	Ears				
	Chest				
	Back				
	Arms				
	Hands				
	Cubital folds				
	Legs				
Lesions	Popliteal folds				
	Buttocks				
	Seborrhea				
	Erythema				
	Edema				
	Vesicles				
	Weeping				
	Papules				
	Crusts				
	Thickening				
Miscellaneous	Scaly				
	Dry				
	Pustules				
	Impetiginous				
	Itching				

KEY: ☐ mild ☒ moderate ☒ severe

CHART II

acids needed for continued normal nutrition. Two preparations made from the soy bean became available. One was in the form of a powder, the other was a thoroughly homogenized emulsion in which the soy bean ingredients and soy bean oil were held in suspension. The former was tried but many infants refused to take it and the product was discontinued. The liquid form was more palatable when properly diluted and an initial trial period showed that the majority of the eczematous infants would take it.

A review of the literature then was made and it revealed little in the way of careful clinical studies concerning the value of soy bean foods in allergic infants and young children. Therefore, a plan was developed which included a close observation of a group of allergy clinic patients with eczema who received a soy bean food as a milk substitute. The examination of the children, the regulation of the treatment, and the recording on special Charts I and II of the results from therapy were performed by the same group of individuals.

A great effort was made to keep everything as constant as possible. The patients were admitted to the hospital and kept in the so-called clean section of the children's ward. A form of isolation technique was carried out in order to prevent as much as possible the introduction of any respiratory infection. When improvement was satisfactory, the cases were discharged and followed in the allergy clinics. Some of

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TABLE I. AGE INCIDENCE AS TO THE TIME OF ONSET OF THE ECZEMA IN 29 INFANTS AND CHILDREN* RECEIVING A SOY BEAN FORMULA

AGE	No.
2 to 6 mos. (incl.).....	7
7 to 12 mos. (incl.).....	11
13 to 18 mos. (incl.).....	5
19 to 24 mos. (incl.).....	6
Total.....	29

*There were 22 males and 7 females.

the homes were visited in order to make sure the parents were following all orders correctly.

Up to the present time thirty-seven infants and young children with eczema have been chosen for study. Eight of these cases had to be dropped because they were unable to take the soy bean food. The investigations concerning the remaining children have covered the last two years. The patients ranged in age from two months to two years at the time of their first visit, and age incidence as to time of onset of the disease is shown in Table I. The males predominated.

All of the cases had family histories positive for allergic diseases. The true picture of eczema existed in each child. The skin showed a papulo-vesicular eruption and vesicles formed which ruptured and exuded a yellowish material leading to crust formation. There was scratching giving rise to a punctiform appearance. In fifteen of the twenty-nine children who were finally investigated, there was an associated seborrheic dermatitis with yellow and greasy scales in eight patients and white and dry scales in seven cases, the latter resembling a form of ichthyosis.

The children of the study received a more or less routine form of external therapy which previously had given the best results in spite of the fact that these were not satisfactory. All scalp lesions of the patients with seborrheic dermatitis were well controlled with boric acid ointment (U.S.P.). The face was treated with wet packs of a saturated solution of boric acid or a solution of aluminum acetate (Burow's solution N.F.) diluted ten to twenty times with distilled water. These packs were used for 24 to 48 hours and if necessary were applied to other parts of the body as well as to the face. Following this, an ointment composed of one part of liquor alumini acetatis, two parts of aquaphor (eucerite)* and three parts of zinc paste was employed. It was gently applied to the skin for a period of three to five days at the end of which time one per cent crude coal tar was added and the application of the latter preparation was continued for approximately one week. Usually by this time the skin was ready for more or less continuous use

*Made up of a group of esters of cholesterol isolated from wool fat and incorporated in pure neutral chemically indifferent aliphatic hydrocarbons.

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of a preparation consisting of one per cent crude coal tar in equal parts of aquaphor and zinc paste. A few patients had a reoccurrence of the more severe symptoms and the external treatment had to be repeated from the beginning. The cases who appeared to be sensitive to tar pro-

TABLE II.

	Soy Bean Food* Diluted With Equal Volume of Water	Average Whole Cows' Milk
Calories per fluid ounce	20	20
Protein	3.1 per cent	3.3 per cent
Fat	4.0 per cent	3.8 per cent
Iodine No.	119-135	26-28
Carbohydrate	1.0 per cent	4.9 per cent
Total minerals	4.5 per cent	0.7 per cent
Calcium	0.13 %	0.118 %
Phosphorus	0.11 %	0.093 %
Iron	0.0002%	0.0002%
Water	87.2 per cent	87.3 per cent

*Mull-Soy prepared and furnished by the Prescription Products Division of the Borden Company.

gressed favorably with the use of mixtures of aquaphor and zinc paste.

Trauma was reduced by placing the child on washed X-ray film, employing cuffs on the arms, and restraining both arms and legs if necessary. At feeding time, however, the child was taken up into the nurse's lap and fed in the upright position. If sedation was necessary, phenobarbital was administered in $\frac{1}{8}$ to $\frac{1}{4}$ grain doses as often as every four hours during the day until the itching and associated scratching were fairly well controlled. Acute flare-ups of irritability usually were checked with the rectal administration of five to fifteen grains of chloral hydrate.

Little difficulty was encountered in avoiding contact with wool, silk, feathers and kapok.

Soon after the external treatment was started in each case, a special diet was ordered. Since most of the children had been receiving unsweetened evaporated milk with marked variations in the solid foods, the soy bean food, the analysis of which is revealed in Table II, was introduced with a more uniform type of elimination diet. Eggs were omitted completely. Depending upon the age of the child, all cereals were permitted with the exception of those containing wheat. Two cases were clearly demonstrated to have oatmeal sensitivity. All vegetables exclusive of potato, tomato and spinach were added. Occasionally there was some indication of a sensitivity to beans and peas. All cooked fruits and very ripe bananas were given. Any flare-up in the eczematous condition was carefully checked with the recent addition of a new vegetable

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or fruit to the diet. Meats were permitted when the child was ready for them. Fruit juices were omitted and at least 25 mg. of ascorbic acid was administered each day. Drisdol, viosterol, or Oleum Percomorphum in viosterol were employed.

TABLE III. LENGTH OF PERIOD REQUIRED TO OBTAIN SATISFACTORY RESULTS*

TIME	No.
2 wks. to 1 mo. (incl.).....	8
5 wks. to 2 mos. (incl.).....	11
9 wks. to 3 mos. (incl.).....	6
13 wks. to 4 mos. (incl.).....	2
Over 4 mos.....	2
Total.....	29

*Eczema disappeared in 18 and was much improved in 11 cases.

The soy bean formula first was prepared by diluting one part of it with two parts of water. After one week, the mixture was changed to equal parts. Eight children referred to before could not take the soy bean formula. They either refused it or developed vomiting, cramps and diarrhea leading almost at once to irritability with an increase in allergic symptoms. Three of the patients had positive cutaneous tests to a soy bean extract; the remaining cases did not give clear reactions. These children have been added to another study involving the use of soy bean oil which is now in progress.

The majority of the patients ingested the soy bean food fairly well. The stools became large and there was a tendency for them to be looser and more frequent than with the ingestion of evaporated milk. In fact in fourteen cases the stools were almost too watery and too many in number to permit continuation of the soy bean product. This situation, however, was remedied by the addition of a kaolin-pectate mixture to the diet in doses varying from one to three drams three to four times each day as long as necessary. No evidence of sensitivity to soy bean protein could be detected in the children developing diarrhea. Could it be due to the fact that soy bean is not digested as easily as other proteins such as meat, whole egg and cows' milk? Four normal non-allergic controls fed relatively large amounts of soy bean formula had large and frequent bowel movements but no diarrhea.

All the patients receiving the soy bean food progressed remarkably well and many were satisfactorily clear of symptoms in a relatively short period of time, as is shown in Table III. This improvement continued and the observation was the most hopeful feature of the study. Twelve of the cases were found to be sensitive to cows' milk by the simple procedure of substituting an evaporated milk mixture of the same caloric

*The Hormel Institute of the University of Minnesota report on the Review of the Literature on the Nutritive Value of Soy Beans.

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value as the soy bean formula. All other conditions as to external treatment and diet were kept constant. Flare-ups in the eczema occurred in these 12 children and they were returned to the soy bean food following which there was rapid improvement. This procedure was re-

TABLE IV. SOY BEAN FOOD INVESTIGATION

I. Eczema cases chosen for study.....	37
1. Refused to take food.....	8
2. Accepted food (2 mos. to 2 yrs.).....	29
Cows' milk sensitivity demonstrated.....	12
Multiple sensitivities suspected.....	17
3. Developed diarrhea but food not discontinued.....	14
4. Marked beneficial effect from food.....	4
II. Normal control cases observed.....	4
Soy bean food well taken with no diarrhea.....	

peated with the same results. Only five of the patients gave positive cutaneous tests to cows' milk protein.

The remaining seventeen cases did not demonstrate any clear-cut reactions to cows' milk in spite of the fact that progress was more satisfactory as long as the soy bean food was employed. Later it was observed that these children could be returned to cows' milk provided small amounts of unsweetened evaporated milk were used. More of the solid foods were permitted but none of the patients could take too rapid an addition of the foods without showing some increase in symptoms. Four children revealed an interesting incident. They had been found to be definitely sensitive to wheat, potato, tomato, or oranges, but after weeks of the ingestion of the soy bean formula, these foods could be eaten with little reaction. When the soy bean food was discontinued and evaporated milk was substituted or no milk was given, the sensitivity to the wheat and the other allergens returned. Members of the group making observations in this study came to the same conclusion after separate checkups of the data collected. No explanation for this phenomenon can be offered at this time but it certainly will be considered an important part of the future fundamental studies which are in progress.

A review of the present soy bean food investigation is presented in Table IV.

SUMMARY

1. The various forms of external treatment for eczema of the infant and young child have not given results which are consistently satisfactory.
2. The addition of elimination diets to the care of the eczematous children has led to more favorable results, but there still is room for improvement.
3. Combining a good form of external treatment with a more or less uniform type of elimination diet has given the clinical investigator an opportunity to determine the value of special forms of therapy.

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4. An investigation has been undertaken with a soy bean formula. All factors have been kept as constant as possible in order to make a careful observation of the influence of this food on the course of the eczema.

5. The study has been a difficult one. Thirty-seven children were offered the soy bean formula. Eight could not take it and soy bean sensitivity was only suspected in three of these patients. Twenty-nine cases ranging in age from two months to two years ingested the food very well, but fourteen developed a diarrhea which was controlled. Four normal non-allergic controls receiving the soy bean formula did not have diarrhea.

6. All of the children progressed remarkably well, with eighteen revealing good, and eleven fairly good, results in a relatively short period of time. The improvement continued long enough to make this observation quite significant.

7. Twelve of the patients were found sensitive to milk. The remaining seventeen were considered to be sensitive to more than one food. Four of the latter showed an interesting phenomenon. Apparently after weeks of soy bean food ingestion, they were able to tolerate much better the other foods to which they had given clinical evidence of sensitivity. This warrants more study.

CONCLUSIONS

When external treatment of the skin is of the best and a good elimination diet is employed, a soy bean food can produce a beneficial effect in eczema of infants and children both in the milk-sensitive patients and in the multiple-food-sensitive cases.

All children cannot take the soy bean formula. Some refuse it and others have gastro-intestinal symptoms indicating a possible allergic reaction. Almost one-half of the patients develop a diarrhea but fortunately in most cases this can be controlled.

RESUMEN

1. Las varias formas del tratamiento local en el eczema de los lactantes y niños no han dado todavía resultados que sean suficientemente satisfactorios.

2. La adición de las dietas de eliminación para mejorar el eczema de los niños, ha mostrado resultados más favorables, pero aun no es suficiente.

3. La combinación de un buen tratamiento local con una dieta de eliminación del tipo más o menos uniforme, ha dado al investigador clínico una oportunidad para determinar la terapéutica necesaria.

4. Una investigación ha sido hecha con la formula del Soy Bean. Todos los factores han sido cuidados constantemente como para hacer una observación cuidadosa de la influencia de este alimento en el curso del eczema.

5. Este estudio ha sido difícil. 37 niños fueron tratados con la fórmula del Soy Bean. 8 de ellos no pudieron tolerarlo. Solamente en 3 de ellos la sensibilización al Soy Bean fué sospechosa. 29 de estos casos, entre dos meses a dos años de edad toleraron el alimento muy bien, pero 14 de ellos mostraron una diarrea la cual fué controlada por nosotros. 4 individuos normales, no-alérgicos, tratados como control, toleraron perfectamente la fórmula del Soy Bean sin mostrar diarrea alguna.

6. Todos los niños progresaron remarcablemente bien, 18 mostraron un resultado bueno, y en 11 el resultado fué regular, en un período de tiempo relativamente corto. La mejoría continuó por un tiempo suficientemente largo como para considerar esta observación como un buen resultado.

7. Se encontró que 12 de los enfermos eran sensibles a la leche. En el resto, que fueron 17, se encontró que eran sensibles a más de un alimento. En 4 de estos últimos se observó un interesante fenómeno. Aparentemente después de la ingestión del Soy Bean por algunas semanas, pudieron tolerar mucho mejor los otros alimentos a los cuales tenían una evidente sensibilidad clínica. Esto necesita mayor estudio.

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THE ALLERGIC PROBLEM OF THE INDUCTEE, THE SOLDIER, AND THE VETERAN

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EVERY medical examiner of the Draft Board is concerned with the question of allergy each time he examines a registrant for induction. How am I to know if this registrant is suffering from any allergic disease? He knows well the difficulty encountered, that is, once the allergic sufferer is free from symptoms, he behaves again like a normal person. He also knows well that several of these registrants are eager to see active military service, and would not reveal the fact that they are suffering from one or more allergic diseases.

Assume he has mentioned that he has bronchial asthma or hay fever, how is the examiner going to evaluate the degree of the severity of the allergic symptoms? He should ask the following questions: (1) Is asthma or hay fever or any of the other allied conditions present in the immediate or remote members of the family? (2) Have you any definite knowledge that the partaking of certain foods causes any of the following symptoms: diarrhea, belching, nausea, vomiting, hives, sick headaches, visual disturbances, rhinitis, abdominal colic, swelling of the face or extremities? (3) Have you any knowledge that when you handle furs or animals of any sort, or go horseback riding you develop a heavy feeling in the chest with shortness of breath and running nose or sneezing? To the female registrant put this question: (4) After going to the beautician for a hair wave or hair setting, or after using hair lotions of any kind, do you develop periodically sneezing, running eyes, running nose, heaviness in the chest with a sensation of oppression, or eruptions of different varieties? Finally ask these registrants this last question: (5) Do you get frequent attacks of "colds," sinus infection, sore throat, and are these conditions present throughout the year or only through special seasons of the year?

If to the first question the registrant replies, "Yes, Doctor, I have a brother with asthma," the statement strengthens the possibility that the examiner may be dealing with a potentially allergic individual, or one already suffering from some form of an allergic manifestation. He knows that an allergic disease like bronchial asthma or hay fever is not directly inherited, but that the tendency is directly inherited.

If to the second question the registrant answers, "Yes," the examiner should ask more definite questions. What particular foods actually cause these already mentioned symptoms and how soon after eating do these symptoms appear?

If to the third question the answer is "Yes," the examiner can assume with a degree of certainty that this applicant is sensitive to the danders or epithelia of certain animals, whether domestic or not.

If to the fourth question the applicant answers "Yes," the examiner surmises that ingredients like flaxseed, orris root, cottonseed, and others are undoubtedly the offending agents, and that he is presumably dealing with an allergic individual.

If the last question is answered in the affirmative, the examiner knows he is dealing with either chronic infection or with a definite periodical form of sensitivity which may be either hay fever or perennial vasomotor rhinitis or allergic rhinitis.

It is a well-known fact that many persons still do not know specifically that there are such diseases as bronchial asthma, hay fever and allergic rhinitis. To them, spells of coughing or shortness of breath are nothing but a long cough or bronchitis, to which they don't pay much attention. Others think that the rhinorrhea or itching of the eyes causing tears is nothing but just an ordinary "cold," which at times lasts a little longer. They call them just "summer colds." The data concerning the symptoms as related by the registrant are very important. He may say, "Well, Doctor, occasionally, I have just a little tightness in the chest, shortness of breath, a little wheezing and a very slight cough." This order of sequence should lead the examiner to think that he has before him a prospective asthmatic, who most probably has not yet developed asthmatic attacks of appreciable severity. If he simply says, "Doctor, I have a little cough at first, then I may get slightly short of breath and wheeze a little," the examiner can assume with a great degree of certainty that he is dealing with an individual suffering from bronchitis of the asthmatic type. This, however, is by no means a hard and fast rule in all cases.

Let us assume, now, that the registrant has definitely admitted he has asthma. How is the examiner then going to make the diagnosis that either bronchitis, alone, or bronchitis with pulmonary emphysema is present along with the asthma? He should ask this question, "How long have you had asthma?" This is important because the duration of the disease often gives a clue as to the type of allergy to expect, the possible prognosis, and the possibility of complications. For instance, summer asthma may mean pollen, seasonal foods, or other types of seasonal exposure, such as fly emanations, horseback riding and so on. Attacks of asthma in the wintertime may mean bronchial infections, cold sensitivity or more close exposure to house allergens. Another important question to ask is this, "Are you free or are there any symptoms, between attacks?" If there is no shortness of breath, cough, or general ill-health between attacks, most likely no complications have developed. However, if the registrant says he coughs a great deal every day between attacks, the examiner should consider that bronchitis has set in. If he says that he brings up a great deal of phlegm with the cough, the examiner should suspect the presence of bronchiectasis. If there is a history that marked dyspnea or exertion is present between attacks, then emphysema, pulmonary, is most likely present. If he says, "Doctor, I have 'colds' that

last a very long time," allergic rhinitis and sinusitis should be considered. Here again the history of allergy in the family strengthens the diagnosis that one is dealing with an allergic person. The story of dermatitis or the so often loosely called eczema and hyperesthetic rhinitis, which have now disappeared, or the history of having had any other allergic manifestations in the past, is more likely in favor of an allergic character of the asthma. Some applicants will say, "Well, Doctor, I had pneumonia a year ago and following it, I developed a cough which is persistent but not disturbing at present." They will add, "I cough occasionally, particularly after I catch a 'cold' or after a little 'grippe.' I don't get any attacks of asthma whatsoever." These statements are more in favor of "asthmatic bronchitis."

The examination of the prospective inductee should be thorough, particularly when bronchial asthma is suspected. Inspection, as a rule, does not reveal anything characteristic about the general physique of the asthmatic person. The asthmatic sufferer with emphysema, however, has a chest which tends to take the shape of a barrel. The ribs are elevated. The individual with intractable asthma is a little easier to detect. He usually looks thin. This is really because of the continued nutritional deficiency produced by the chronicity of this disease.

If the applicant is examined during an attack of asthma the diagnosis is very easy. His breathing is rapid and shallow and wheezing noises are usually heard at considerable distance from him. This is an important observation. When he inspires, there is very little expansion of his chest and yet the chest looks enlarged. He breathes really by elevating the entire thoracic cavity with the aid of the accessory muscles of respiration. The neck muscles are usually prominent and the veins in the neck look engorged. The applicant usually keeps on coughing during the examination. On percussion of the chest, it is found that the entire thoracic cavity, as a rule, is hyperresonant, especially during the asthmatic attack. The area of cardiac dullness may be obliterated. Auscultation reveals a variety of râles scattered throughout the chest. They are usually dry. They are described by many as sibilant or sonorous, but the appropriate term is really "wheezing râle." As a rule, since these râles are generalized, they quite frequently obscure any other auscultatory changes which may be present in the chest. The nasal mucous membrane may show a definite edema in some cases, but not in all.

If the applicant presents himself for examination when he is free from symptoms of asthma, the examination should include the following: (1) nose and throat; (2) teeth; (3) cardiovascular system; and (4) laboratory and roentgenographic examination of the chest and sinuses.

The direct nose and throat examination may show varying degrees of these findings: blanched, swollen mucous membrane; boggy blanched inferior and middle turbinates; and a thin discharge or rhinitis. This is particularly seen in the hay-fever and allergic rhinitis persons. Transillumination

mination should be part of the examination of these applicants with an allergic history. This examination should be followed by a roentgenogram of the sinuses of the head and face.

The examination of the teeth is, as a rule, performed routinely in all applicants. If, however, infected roots are present they should be marked and extracted as soon as possible after their induction. These foci of infection may be responsible for the precipitation of an attack of asthma or may be foci for other diseases.

The examination of the chest in an applicant who is free from attacks of asthma usually does not show very much, but if this applicant has been getting frequent attacks, the examiner will find a few wheezing râles. These can be best elicited by compression of his chest manually, immediately following a forced expiration. In this examination he should look for the possible presence of other disease processes resembling asthma or the further complications of this disease. If emphysema is present, the chest is usually increased in diameter, especially antero-posteriorly. The expansion of the chest is diminished. The apices and the bases are usually more hyperresonant than normal. There is very little excursion of the apices and the bases during a full deep inspiration. The breath sounds are diminished in intensity and the expiratory phase is prolonged.

If moist râles are heard, then bronchitis should be considered. If constant localized moist râles are heard in the bases or lower portion of the lung field, bronchiectasis should be considered. In advanced cases, there may be present dullness and diminished breath sounds.

In the examination of the cardiovascular system of the chronic asthmatic, the following conditions are present: The blood pressure is usually low, and there is marked change in the pressure between expirations and inspirations. The heart is usually within normal limits, except when pulmonary hypertension has set in. There are usually no arrhythmias or murmurs present. The tones of the cardiac sounds are feeble. When the applicant is free from symptoms of asthma there are usually no deviations from the normal.

In the laboratory examination of the bronchial asthmatic person, the most constant microscopic finding is the presence of a large number of eosinophiles in the sputum and nasal secretion, and at times in the blood. This finding is more noticeable during an attack of asthma. Many bacteria are usually present in the sputum, like the non-hemolytic streptococci, micrococcus catarrhalis, pneumococcus, staphylococcus and other bacteria. In the differential count of the blood, one should look for eosinophiles. There is usually an eosinophilia of 4 to 10 per cent and sometimes higher. The other laboratory methods, including electrocardiographic tracings, as a rule do not show very much.

Roentgenographic examination of the chest should be routine. This, however, is done not for the diagnosis of asthma, which usually is negative, but for the detection of any complications and the presence of

other diseases simulating asthma, and also for the discovery of unrelated chest diseases. During an attack of asthma, fluoroscopy and roentgenography show that the lungs are distended and there is very little expansion. During the interval free from symptoms, there may be present hylum enlargement and increased bronchial markings. If it shows very heavy shadows, bronchiectasis is suspected. This, however, is best diagnosed with iodized oil. This last method should be in the hands of the expert who has considerable experience with its use. The other conditions to be looked for are atelectasis, tuberculosis, pneumonitis, new growth and other chest conditions.

It should be routine practice of every examiner to subject every applicant with a positive familial history of allergy, to skin tests. The method of choice is left to the examiner. He can use the method with which he is most familiar. The intracutaneous method, however, seems to give the best results. If the registrant so tested is found sensitive with marked reactions to some of the inhalants or air-borne substances, he should be considered either as a potential allergic, or as one who already has some form of allergic manifestation, even though the physical examination has been negative. The tests should include all available materials which may have a reasonable bearing on the symptoms.

Colonel Sanford W. French, MC, and Major Lawrence Halpin, MC¹ have written an excellent paper entitled "Report of Allergy in the Fourth Service Command." This paper is really the first of its kind to give a detailed description of the allergic problems as encountered in the Army. I quote directly from the paper:

"Most of the hay-fever patients dated the original onset of their complaint many years prior to their induction into the Army. A few, however, denied any previous complaints of this character. The discomfort and the severity of symptoms in these patients were sufficient to interfere with the performance of their duties. . . . Institution of pollen therapy and continuation of that therapy in the outpatient clinic permitted these patients to perform full duty throughout the rest of the season."

This shows that hay-fever symptoms are controllable if proper treatment is instituted early. These authors bring out these important points in the summary:

"In a summary of twenty-one clinics, 3,419 Army allergy patients and 498 civilian allergy patients were reported to the Surgeon General's Office. From January to October, 1942, 1,153 allergy patients were admitted to the hospitals of these twenty-one stations. . . . The average hospital days were eighteen."

Those allergic soldiers whose symptoms of asthma or other allied conditions are well controlled with proper treatment and who are able to perform their duties as a soldier are kept in the Service. Those, however, with severe symptoms which render them very disabled are given a certificate of disability discharge (CDD).

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Some of the allergic soldiers who have been given a certificate of disability discharge feel they have a grievance against the Army medical officer, because they believe the medical officer has been directly responsible for their discharge from the service. They also feel that the Service is responsible for all ailments from which they may be suffering. The Army records, however, show that every one of them receives excellent medical and general attention.

This soldier, who is now back again in civilian life with an honorable discharge, is known as a veteran. He soon learns he is entitled to benefits for service-connected disabilities, and nonservice-connected diseases or injuries. Through his contact officer, either in the American Legion, or in the Veterans of Foreign Wars organization, he learns he is entitled to three kinds of veterans' benefits, namely: (1) monetary benefits, including disability compensation, pension, adjusted compensation, and Government insurance; (2) hospitalization, or domiciliary care, and out-patient treatment; and lastly (3) burial and funeral expenses. This latter, of course, is of very remote interest.

For those who are not familiar with the Veterans' Administration, it is worthy of mention. The main office of this organization is located in the Veterans' Administration Building, Washington, D. C. Over 100 field stations are located in the various states, and there are insular offices in Hawaii, the Philippines, and Puerto Rico. The managers of all field stations are responsible to the Administrator in Central Office. The stations are classified as follows: (1) Veterans' Administration regional offices, whose principal functions are administrative; (2) Veterans' Administration facilities, which have regional office functions in addition to hospital and domiciliary activities; (3) Veterans' Administration facilities having major domiciliary activities with hospital accommodations; (4) Veterans' Administration having only hospital activities; and (5) Veterans' Administration facilities having regional office functions in addition to hospital activities.

The principal functions of the regional offices are: (1) Contacts with and assistance to claimants and beneficiaries or their representatives as provided by law; (2) preparation and adjudication of claims for disability compensation and pension of persons whose entire military or naval service was subsequent to July 15, 1903, and prior to October 8, 1940; unless jurisdiction is otherwise vested in central office; (3) guardianship activities for incompetent beneficiaries; (4) making of medical examinations; (5) rendering out-patient relief—surgical, dental and prosthetic—to veterans not patients in a Veterans' facility; (6) adjudication of claims for burial and funeral expenses.

After this veteran has obtained all the necessary information from his contact officer, he places a claim on a special form No. 526, namely, "Application for Compensation for Veterans' Disabilities in World Wars I and II.

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For those who are not acquainted with the work of the Veterans' Administration, particularly the medical side, it is well to mention here that there are two separate divisions, the medical division and the adjudication division. Each one is supervised by two separate directors. The physicians working for the medical division are known as medical officers, and those working for the adjudication division are known as medical rating specialists. Their duties differ a great deal.

Those physicians who accept positions in the adjudication division are assigned to a training course at a designated facility for a period of four to six weeks.

The medical officers designated to make examinations for rating purposes must also be specially trained. The medical examiner must know that the medical rating specialist is really concerned with the reflecting pictures of functional impairment, as can be translated into percentage evaluations of average reduction in earning capacity from such injuries or diseases in civil occupations. It is really the relative disability resulting from the disease or injury about which the medical rating specialist is concerned. A clear full report of the expressions of disability, that is, the physical findings and the subjective symptomatology, is needed.

The difference between compensation and pension should be mentioned here. Compensation is a term used to describe the monetary benefits payable on account of service-connected death or disability resulting from service in World War I. Corresponding benefits payable on account of service other than World War I are termed "pensions." The latter term is also used to describe nonservice-connected monetary benefits, including those payable to World War II veterans.

Since the amount payable to a veteran is in accordance with the degree of disability attributable to service, not existing prior to induction or aggravated by service, it is important then to describe all the symptoms and findings properly and in the proper sequence where practicable.

Most of the diseases are rated in terms of degree of severity, from *mild* to *moderate* and *severe* symptoms. Bronchial asthma, as an example, is rated as follows:

Asthma, mild is rated as such when the symptoms or attacks occur at widely separated intervals, and when there is no pulmonary emphysema present. A veteran given such a diagnosis and rated as such by the Medical Rating Board receives a rating of 0 or no per cent.

Asthma, moderate is rated as such when the attacks are rather frequent (ten- to fourteen-day intervals), and when there is slight to moderate amount of emphysema, with moderate dyspnea between the attacks. A veteran given such diagnosis and rated as such by the Medical Rating Board receives a rating of 30 per cent.

Asthma, severe is rated as such when the attacks are very frequent, and when there is moderate to severe dyspnea with continuous emphysema between the attacks, and also when there is embarrassment of heart action.

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A veteran given such diagnosis and rated as such by the Medical Rating Board receives a rating of 50 per cent.

If the above symptoms, as in severe asthma, are accompanied with dyspnea at rest, and cyanosis with severe impairment of general health or total disablement, the asthma is rated as 100 per cent.

All the above ratings are according to the 1933 schedule. There is a 1925 schedule also.

The other diseases and injuries are rated practically in the same manner. The important thing to remember is to describe the subjective and objective symptoms and findings properly, not to forget the laboratory and x-ray examinations when indicated. The medical examiner is not to modify the disease or injury by the terms *mild*, *moderate* or *severe*. This should be left to the medical rating specialist and other members of the Rating Board. They are the ones who will use these modified terms after the respective diagnoses.

Once a veteran has been given a rating for his service-connected disease of disability by the Medical Rating Board, whether directly incurred in service or aggravated by service, he is informed about it in writing. Thereafter, he receives the allotted sum every month regularly. If the diagnosis given is of a temporary nature—that is, the condition may improve or get worse, he is called for re-examination after a period of eighteen months or earlier. At present there are thousands of veterans with service-connected diseases or injuries who are receiving out-patient and in-patient treatment in Veterans' hospitals and domiciliary facilities. This number has already grown tremendously. The need for more Veterans' hospitals is certainly becoming very urgent, particularly now with the incoming of hundreds of new veterans daily from World War II.

The medical officers of the Veterans' Administration have great tasks ahead of them to perform. They know that every case can be followed from the day of the veteran's induction in military service until his last days. The veteran knows he has an excellently equipped hospital at his command with various specialists on whom he can call for consultation. It is the opinion of this writer that as the Administration grows, there will be a need for more full-time medical officers, and specialists on full-time and part-time basis. The aim of the Administration is to give the veteran the best medical attention at its command.

So far, there are several diagnostic centers of all sorts in the Administration, but as for allergy, there is only one such center in the country, namely, in Pittsburgh, Pennsylvania, and, unfortunately, situated in the most unhealthy place in the country for allergic patients. The director of this allergy center feels there is a growing need of other such centers in different parts of the United States, which we all hope will be formed soon. These places should act not only as diagnostic allergy centers, but also as centers of learning, giving intensive courses in allergy to medical officers interested in this field.

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So far a great deal has been said about the claimant whose claim has been granted for compensation or pension, but nothing has been said about the other veteran whose claim has been denied. What recourse is then open to this claimant? He may appeal from a decision rendered by the Rating Board, provided the appeal is taken within one year; otherwise the decision becomes final. The appeal application must be signed by the claimant or his accredited representative, and must contain alleged mistakes of facts or error of law in the adjudication of the claim. It is important to mention this here. The ratings of disability are usually made upon a liberal basis and consistent with the facts in every case. When, after a careful consideration of all procurable and assembled data, a reasonable doubt arises regarding service origin, the degree of disability, or any other point, such doubt is usually resolved in favor of the claimant.

A veteran whose claim has been denied for service-connected or service aggravation, even after appeal, is still entitled to hospital treatment, providing, of course, he has received an honorable discharge from the last period of war service, and also if he makes a statement under oath that he is financially unable to supply himself with the necessary hospital treatment, and also providing a bed is available. This veteran so hospitalized for whatever allergic disease, may receive in addition to medical treatment other benefits, like toilet articles, smoking tobacco or cigarettes, stationery and postage, barber service, providing his income is less than \$6.00 monthly. He may also receive personal clothing when his monthly income is less than \$10.00.

When a veteran is hospitalized in a Veterans' Administration facility, he receives all the necessary medical care. The allergic patient receives a thorough allergic study. Later when he is discharged from the hospital, a summary of all the findings and also directions about treatment in the future are sent to his family physician, providing he gives such authorization in writing.

The same veteran and any other veteran is eligible to domiciliary care also if he or she has not been dishonorably discharged from his or her last period of war service and is unable to defray the expense of such care. This form of treatment is granted when he or she is suffering from a disability, disease or injury (defect) that incapacitates him or her from earning a living for a prospective period of time.

Vocational training is available also to all veterans who have been in active military service anytime after December 6, 1941, and during the present war, providing they have received an honorable discharge, and have disability or disabilities incurred in or aggravated by such service for which a pension is payable under laws administered by the Veterans' Administration or would be but for receipt of retirement pay, and are in need of vocational training to overcome the handicaps such disability or disabilities. During authorized training, pension is payable at the rate of \$80 per month to a single man and \$90.00 to a married man, with an

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added allotment of \$5.00 per month for each dependent child and \$10.00 per month for each dependent parent.

When one considers all the benefits that an honorably discharged veteran is entitled to, he immediately realizes that, after all, it is worth fighting for Uncle Sam.

SUMMARY

1. The difficulties encountered by the examining physician of the Induction Board are discussed.

2. The important questions for the detection of the allergic manifestations in prospective soldiers are pointed out.

3. The allergic problem as encountered in the Army is briefly mentioned.

4. The benefits that honorably discharged veterans receive are amply discussed.

5. This question is still debatable, namely: How is the Rating Board specialist going to know whether the allergic disease existed prior to induction or enlistment? If at the time of such examination, the examiner finds that the physical examination is negative and that the history does not suggest the existence of allergy in the family, and the allergic tests if performed are negative, then it is safe to assume that the allergic disease or manifestation was not there at that time. If, later, this soldier develops any allergic disease, it can be said that it developed during service. Later, when this soldier is discharged from service, service connection for such a disability can be given. It is true that allergic diseases are not directly inherited and the tendency alone is inherited, yet no one can foretell the exact time of their appearance in life. As stated before, it is possible that factors like overexertion, worry, exposure to cold or excessive heat, dampness, emotional strain and many others might precipitate the appearance of that hereditary tendency.

If, on the other hand, the allergic disease was present at the time of induction or enlistments to a degree hardly noticeable, and later it became greatly manifested with symptoms so disabling as to cause separation from the Service, it can be said with some degree of certainty that this disease undoubtedly was aggravated by service.

It is hoped that this paper will be of service to the examining physician of the Induction Board, to the medical officer at the enlistment or induction center, and the medical officers of the Armed Forces, to the Medical Board rating specialists, to the medical officers of the Veterans Administration and to all medical practitioners in civilian life.

SUMARIO

1. Se han discutido las dificultades que el médico del Consejo de Inducción encuentra en el examen físico.

2. Se han apuntado las interrogaciones principales para descubrir las manifestaciones alérgicas en los soldados en perspectiva.

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3. Se ha discutido brevemente el problema alérgico según se encuentra en la Armada.

4. Se ha resuelto en detalle los beneficios que reciben los soldados honorablemente licenciados.

5. Este asunto es todavía disputable, especialmente en: ¿Cómo puede saber el especialista del Consejo de Evaluación, si la enfermedad existía antes de la inducción o alistamiento? Si en el momento de este exámen, el médico encuentra que el exámen físico es negativo, que en la historia no hay ninguna sugestión de la existencia de alergia en los antecedentes, y cuando las pruebas cutáneas son negativas, se puede decir, con cierta seguridad, que la enfermedad alérgica o manifestacion no existía en aquella hora. Si más tarde este mismo soldado desarrolla un enfermedad alérgica, se puede decir que ella se ha desarrollado en el Servicio o Armada. Más tarde, cuando este soldado es licenciado ésta enfermedad se puede relacionar al Servicio. Si es verdad que las enfermedades alérgicas no son directamente heredadas y que la tendencia solo es heredada, ninguno puede pronosticar cuando es el momento exacto de su aparición en la vida. Según ya se ha citado antes, es posible que factores como éstos: esfuerzos excesivos, angustias, contacto con mucho frío o calor, humedad, esfuerzo emocional y muchos otros, pueden precipitar la aparición de esta tendencia hereditaria.

Si, por otra parte, la enfermedad alérgica, existía en el momento de la inducción o alistamiento en un grado casi imperceptible, y más tarde se manifiesta con síntomas que incapacitan al soldado, causando su separación del Servicio, se puede decir, con cierta seguridad, que la enfermedad fué, sin duda, agravada por el Servicio.

Se espera que éste artículo sea de beneficio para el médico del Consejo de Inducción, el médico oficial en el Centro de Inducción o Alistamiento, y los médicos oficiales de las Fuerzas Militares; y también para los especialistas del Consejo Médico de Evaluación, los médicos oficiales de la Administración Veterana, y todos los médicos prácticos en la vida civil.

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Attacks of migraine were treated with 20 gr. of urea in water three times a day for one week; 20 gr. twice a day for one week, and 20 gr. daily for an indefinite period. There were no untoward effects. It is felt that the good results may be due to the correction of a temporarily disturbed tolerance by the diuretic action of the urea. The patients' symptoms returned when the therapy was discontinued.

L. J. H.

EXPERIMENTAL APPROACH TO ORAL TREATMENT OF FOOD ALLERGY

I. Chemistry of Food Propeptans

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THE role of type-specific propeptans in the diagnosis and treatment of food allergy has been discussed in some detail elsewhere.^{1,2} The present paper will be devoted to a discussion of the chemical properties of these propeptans.

Propeptans are derived from the individual foods through digestion by hydrochloric acid, pepsin and trypsin. Thus these preparations contain all the protein cleavage products such as the proteoses, peptones, subpeptones, simple peptids and amino acids. On the other hand, as demonstrated by tests with 10 per cent sulfosalicylic acid and 10 per cent trichloroacetic acid, propeptans do not contain any native protein; nor do they contain metaprotein.

The guiding principle in the preparation of propeptans is to destroy the native protein through mild and partial digestion of the protein, but to preserve its type-specific complexes; the latter, administered in proper doses, are intended to protect the hypersensitive organism against certain food items which would otherwise elicit characteristic allergic manifestations. In order to achieve this goal, hydrolysis is performed with the mildest digestive ferment available, namely pepsin, which promotes this process under optimal pH condition. However, since under the digestive action of pepsin, large complexes of amino acid chains remain intact in molecular form, it is necessary to subject the products to some further, but very slight degradation by trypsin. Yet this latter process must by no means be carried too far, for a too radical splitting of the chains and breaking off of some of the components will result in the destruction of the type-specific complexes and thereby destroy the type-specific action of the preparation.

We have performed an extensive series of animal experiments to determine the conditions under which food digests are most effective. These experiments revealed the fact that the best protective action is given by digests comprising proteose-N (70 to 80 per cent), peptone-N (approximately 10 to 15 per cent), with subpeptones, simple peptides and amino acids making up the balance. Table I shows the great differences in the degree of protein disintegration, depending on the type and strength of the ferment employed and also on the duration of the digestive process.

From the Department of Allergy, Jewish Hospital.
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TABLE I. COMPARISON OF THE CHEMICAL COMPOSITION OF THE PROTEIN FRACTION OF EGG DIGESTS DEPENDENT ON THE TYPE AND DEGREE OF DIGESTION

	Deep Acid Pepsin Digestion. Then Light Alkaline Trypsin Digestion. Egg Digest No. 16	Deep Acid Pepsin Digestion. Then Moderate Alkaline Trypsin Digestion. Egg Digest No. 15	Deep Acid Pepsin Digestion. Then Deep Alkaline Trypsin Digestion. Egg Digest No. 11
Total N	9.15	7.03	9.30
Water Soluble N	9.15	7.03	9.28
Water Insoluble N	None	None	0.02
Acid Precipitated N	None	None	None
Proteose N	6.90	2.81	2.26
Peptone N	0.89	1.38	3.96
Subpeptone and Simple Peptid N	0.14	1.52	1.62
Amino Acid N	1.22	1.32	1.44
Percentage of Soluble Nitrogen as:			
Proteose	75.3	40.0	24.4
Peptone	9.7	19.6	42.7
Subpeptone and Simple Peptid	1.6	21.6	17.4
Amino Acid	13.4	18.8	15.5

Table I also demonstrates that when only a slight degree of alkaline trypsin digestion supplements the intensive, acid digestion performed by pepsin, the proteose-N comprises nearly four-fifths of the total-N. A moderate degree of digestion by trypsin lowers the proteose-N to 50 per cent and a high degree to some 25 per cent. At the same time, the levels of the deeper cleavage products of the protein increase.

It is almost self-evident that the total N-contents of the various propeptans must be dependent upon the relative abundance of protein in the original substance. They vary to a certain extent, depending on the origin, age, et cetera of the substances from which they are derived. Highest in nitrogen content are egg, meat and fish propeptans; then come peanut, cheese, pea propeptans. Celery, orange and grapefruit propeptans have the lowest nitrogen content.

The various protein cleavage products in the different propeptans are also subject to quantitative fluctuations within certain limits. These fluctuations may be explained primarily by the differences in the ferments employed (their concentration, duration of exposure to the digestive process, et cetera). Moreover, it is quite natural for animal and vegetable products to react differently, within certain limits, to ferments; therefore, special quantitative factors must be considered when dealing with each individual food item. Thus, it is difficult to get as high a percentage of proteose-N from foodstuffs rich in sugar and cellulose, notably fruits and vegetables, as from animal food products. Lastly, before subjecting a given foodstuff to the digestive procedure it should be

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TABLE II. CHEMICAL COMPOSITION OF SIX REPRESENTATIVE FOOD PROPEPTANS

	Beef	Egg	Wheat	Milk	Carrots	Apple
Total N	11.40	9.15	7.85	4.00	3.26	1.75
Water Soluble N	11.40	9.15	7.85	4.00	3.26	1.75
Water Insoluble N	None	None	None	None	None	None
Acid Precipitated N	None	None	None	None	None	None
Proteose N	8.03	6.90	6.26	2.69	1.87	1.99
Peptone N	2.07	0.89	0.85	0.70	0.22	0.16
Subpeptone and Simple Peptid N	0.15	0.14	0.13	0.20	0.86	0.33
Amino Acid N	1.15	1.22	0.61	0.32	0.31	0.17
Percentage of Soluble Nitrogen as:						
Proteose	70.4	75.3	79.7	67.3	57.2	62.5
Peptone	18.2	9.7	10.8	17.4	6.8	9.3
Subpeptone and Simple Peptid	1.3	1.6	1.7	7.2	26.5	18.7
Amino Acid	10.1	13.4	7.8	8.1	9.5	9.5

TABLE III. COMPARISON BETWEEN PROPEPTANS AND COMMERCIAL PEPTONES

	Beef Propeptan	Armour's Peptonum Siccum	Bacto Peptone	Fairchild's Peptone
Total N	11.40	14.00	14.56	13.60
Water Soluble N	11.40	14.00	14.56	13.60
Water Insoluble N	None	None	None	None
Acid Precipitated N	None	None	Trace	0.10
Proteose N	8.03	6.93	7.41	7.28
Peptone N	2.07	2.41	3.12	1.67
Subpeptone and Simple Peptid N	0.15	1.82	1.37	0.85
Amino Acid N	1.15	2.84	2.66	3.70
Percentage of Soluble Nitrogen as:				
Proteose	70.4	49.5	50.9	53.6
Peptone	18.2	17.2	21.4	12.3
Subpeptone and Simple Peptid	1.3	13.0	9.4	6.3
Amino Acid	10.1	20.3	18.3	27.2

briefly boiled, since raw foodstuffs are generally adulterated with bacteria which may lead to toxic products in the preparation.

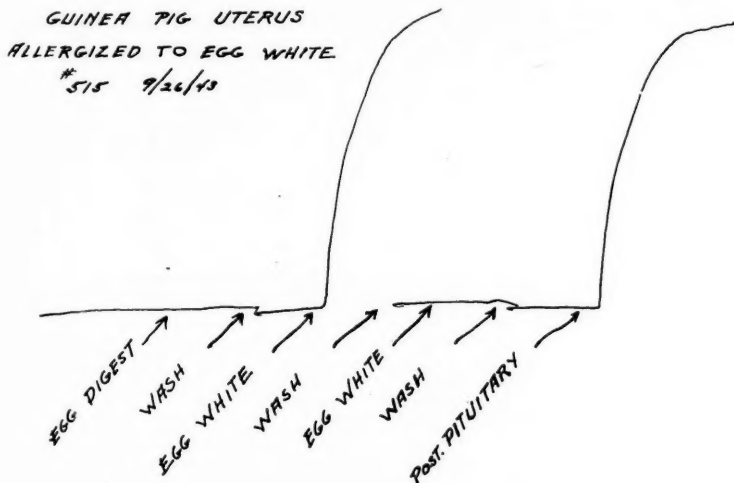
Table II presents a few representative examples.

Table III illustrates the average composition of the propeptans* as compared, for example, with commercial preparations of protein cleavage

*We analyzed pure food digests (propeptans), which Dalare Associates were kind enough to put at our disposal. Glycyrrhiza, which in itself contains 1.4% protein, is added to the commercial propeptans. Each food propeptan capsule contains 0.02 g. glycyrrhiza and a small amount of calcium phosphate.

products. It clearly shows that the commercial peptones are degraded far more extensively than the propeptans.

The protein cleavage products were analyzed according to the procedure described by Wasteneys and Borsook.³



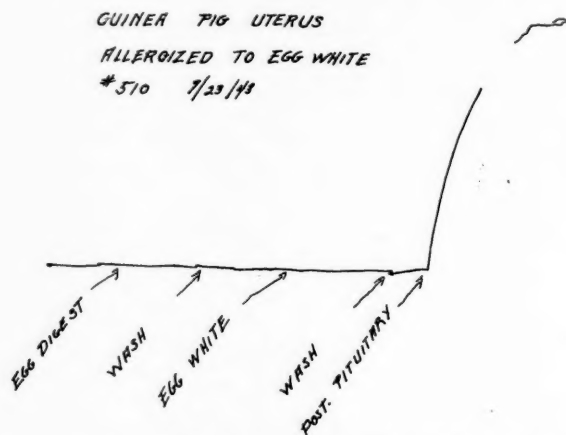
Graph 1. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white and receiving no protective treatment. There was no reaction upon the addition of Egg Digest 16. A violent reaction followed when egg white was added, indicating a high degree of hypersensitiveness. There was no reaction to a second portion of added egg white, proving that the first reaction was specific for egg white. The final reaction was the result of posterior pituitary extract added as a check on the sensitivity of the uterus.

TABLE IV. GUINEA PIG 510 ALLERGIZED TO EGG WHITE; TREATED BY INTRAVENOUS INJECTIONS OF EGG DIGEST 16; FOLLOWED BY SHOCK DOSES OF EGG WHITE

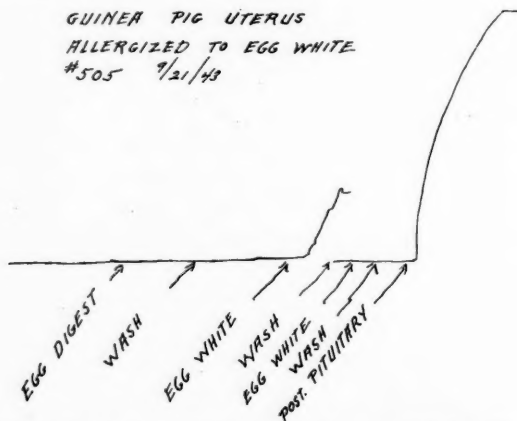
Allergized by intraperitoneal injection of 0.1 c.c. of 50 per cent Egg White in Saline. 9/23/43.		
Treatment: By intravenous injections every ten minutes.		
Dose	Soluble Nitrogen of Egg Digest 16	Reaction
1	1.0 mgs.	None
2	2.5 mgs.	None
3	5.0 mgs.	None
4	10.0 mgs.	None
5	20.0 mgs.	None
Fifteen minutes later—Shock Doses of Egg White every five minutes.		
1 M.L.D. = 0.1 c.c. of 1 per cent Egg White (0.02 mg. of soluble Nitrogen)		
Shock Dose	M.L.D.	Reaction
1	1	None.
2	2.5	None.
3	5.0	None.
4	10.0	Slight, bristling.
5	20.0	Slight, bristling. Animal was killed by blow on head forty-five minutes after the last shock dose.

In addition to chemical analyses we have endeavored to study the problem of optimum amounts of digestion of food proteins by the anaphylactic experiment. The following tables and graphs show that clinical protection and de-allergization as demonstrated by the absence of an-

tibodies from the uterus, can be achieved only when the propeptans retain their type-specificity or, in other words, if the degradation of the protein is not carried too far.



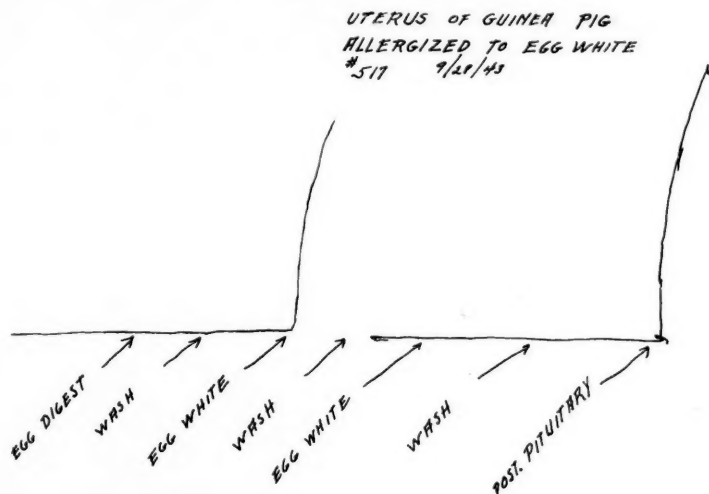
Graph 2. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white, followed by parenteral skeptophylactic treatment with Egg Digest 16. There was no reaction upon the addition of Egg Digest 16, and no reaction upon the addition of egg white, indicating absence of antibodies in the uterus. Posterior pituitary extract was added as a check upon the sensitivity of the uterus.



Graph 3. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white, followed by parenteral skeptophylactic treatment with Egg Digest 15. There was no reaction upon the addition of Egg Digest 15. A slight reaction followed upon the addition of egg white, showing that some but not all of the antibodies have been neutralized by the treatment. No reaction to a second portion of added egg white indicated that the reaction was specific. A final addition of posterior pituitary extract was made as a check upon the sensitivity of the uterus.

As mentioned above, Table I presents the analyses of three digests of egg, subjected to various degrees of degradation with enzymes.

Graph 1 illustrates the violent reactivity of the uterus of a guinea pig that has been allergized to egg and not been protected with Egg Digest 16. The reaction was elicited by adding egg extract.



Graph 4. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white followed by parenteral skeptophylactic treatment with Egg Digest 11. There was no reaction upon the addition of Egg Digest 11. A violent reaction followed the addition of egg white, indicating the presence of considerable quantities of antibodies. No reaction followed a second addition of egg white, proving that the preceding reaction was specific. A final addition of posterior pituitary extract was made as a check upon the sensitivity of the uterus.

TABLE V. GUINEA PIG 517 ALLERGIZED TO EGG WHITE; TREATED BY INTRAVENOUS INJECTIONS OF EGG DIGEST 11; FOLLOWED BY A SHOCK DOSE OF EGG WHITE

Allergized by intraperitoneal injection of 0.1 c.c. of 50 per cent Egg White in Saline. 9/28/43.
Treatment: Intravenous injections at intervals of ten minutes.

Dose	10% Egg Digest 11	Soluble Nitrogen	Reaction
1	0.1 c.c.	1.0 mg.	None
2	0.25 c.c.	2.5 mg.	None
3	0.50 c.c.	5.0 mg.	None
4	1.00 c.c.	10.0 mg.	None
5	2.00 c.c.	20.0 mg.	None

Fifteen minutes after last treatment

Shock Doses of Egg White every five minutes.

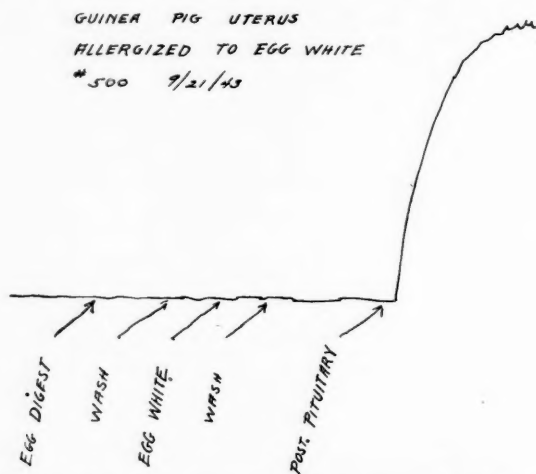
1 M.L.D. = 0.1 c.c. of 1 per cent Egg White (0.02 mgs. of Soluble Nitrogen).

Shock Dose—1 M.L.D.—Animal died in six minutes in severe anaphylactic shock.

Table IV and Graph 2 demonstrate that parenteral skeptophylactic treatment with Egg Digest No. 16, consisting of about 75 per cent proteoses and 10 per cent peptones, protects the guinea pig against 20 minimal lethal doses and deallergizes the animal, as shown by the complete absence of antibodies from the uterus.

Digest 15, which is composed of approximately 40 per cent proteoses and 20 per cent peptones, gave less satisfactory clinical results; moreover, the uterus reacted slightly to egg white (Graph 3). However, when

the protein is too deeply digested, as demonstrated by the chemical analysis, the quantity of peptones (42.7 per cent) almost double that of proteoses (24.4 per cent), one minimal lethal dose will suffice to kill the



Graph 5. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white, followed by an oral treatment with Egg Digest 16. There was no reaction upon the addition of Egg Digest 16. No reaction followed the addition of egg white, indicating the absence of antibodies in the uterus. Posterior pituitary extract was added as a check upon the sensitivity of the uterus.

TABLE VI. GUINEA PIG 500 ALLERGIZED TO EGG WHITE; TREATED BY ORAL ADMINISTRATION OF EGG DIGEST 16; FOLLOWED BY SHOCK DOSES OF EGG WHITE

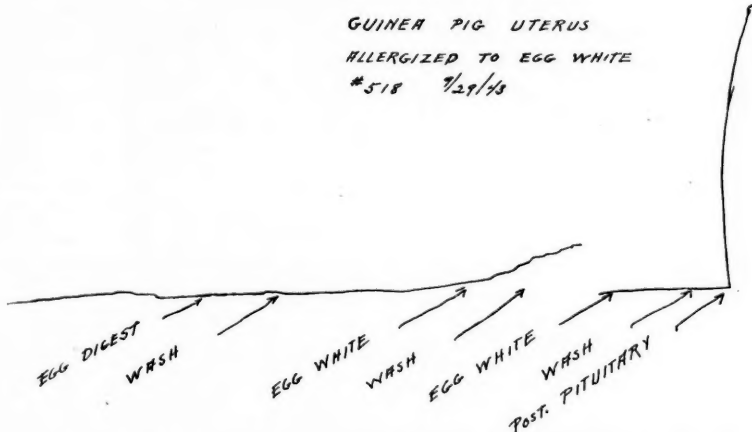
Allergized by intraperitoneal injection of 0.1 c.c. of 50 per cent Egg White in Saline 9/21/43.
Treatment: By mouth, 5 mgs. of Soluble Nitrogen of Egg Digest 16 + 0.2 grams of Glycyrrhiza + 2.0 c.c. of water.
Sixty-six hours later—Shock Doses of Egg White every five minutes.
1 M.L.D. = 0.1 c.c. of 1 per cent Egg White (0.02 mg of Soluble Nitrogen).

Shock Dose	M.L.D.	
1	1	None.
2	2.5	None.
3	5.0	None.
4	10.0	Slight twitching of nose and bristling.
5	20.0	Slight, bristling, but fully recovered in one hour. Then killed by blow upon head.

animal (Table V) and the uterus will react violently, proving that it contains considerable quantities of antibodies. (Graph 4).

Virtually identical results were achieved when the propeptans were administered orally. In contradistinction to the intravenous skeptophylactic technique, which consisted in giving five doses of the digest and the lethal shock doses immediately thereafter, the oral technique called for administration of the digest in one single dose, sixty-six hours prior to the injection of the allergen. Egg Digest 16, given orally sixty-six hours before administration of the doses, gave the animals protection against the 20 M.L.D. Only a very mild reaction, in the form of brist-

ling, was observed. The uterus was found to be free from antibodies (Table VI, Graph 5).



Graph 6. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white and followed by an oral treatment with Egg Digest 15. There was no reaction upon the addition of Egg Digest 15. A slight reaction followed the addition of egg white, indicating that many of the antibodies were neutralized by the treatment. Posterior pituitary extract was added as a check upon the sensitivity of the uterus.

TABLE VII. GUINEA PIG 518 ALLERGIZED TO EGG WHITE TREATED BY ORAL ADMINISTRATION OF EGG DIGEST 15; FOLLOWED BY SHOCK DOSES OF EGG WHITE

Allergized by intraperitoneal injection of 0.1 c.c. of 50 per cent Egg White in Saline 9/21/43. Treatment: By mouth, 5 mgs. of Soluble Nitrogen of Egg Digest 15 + 0.2 grams of Glycyrrhiza + 2.0 c.c. of water.

Sixty-six hours later—Shock Doses of Egg White every five minutes.

1 M.L.D. = 0.1 c.c. of 1 per cent Egg White (0.02 mg of Soluble Nitrogen).

Shock Dose M.L.D.

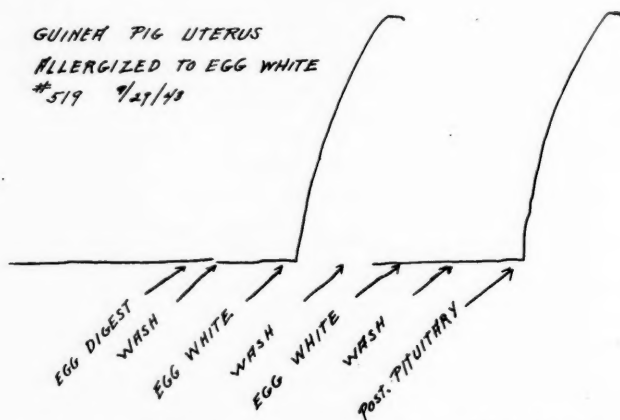
1	1	None.
2	2.5	None.
3	5.0	Slight, twitching of nose.
4	10.0	Marked, gasping.
5	20.0	Animal died in twenty-five minutes.

Egg Digest 15, given orally, gave adequate protection against 5 M.L.D., but 20 M.L.D. were fatal (Table VII). The uterus contained a fair amount of antibodies, as evidenced by the slowly-rising curve in the Schultz-Dale experiment (Graph 6).

Egg Digest 11, given orally, did not even afford protection against 1 M.L.D. (Table VIII; the uterus, correspondingly, reacted violently to egg white (Graph 7).

In conclusion, we wish to state that experiments with the oral approach further confirm and definitely highlight the value of food proteins that have been subjected to only a mild degree of degradation. While these animals which were pretreated with Digest 16 tolerated 20 M.L.D. very well, guinea pigs receiving Digest 15 became markedly anaphylactic when

10 M.L.D. were injected, and died, following 1 M.L.D., if Digest 11 was used.



Graph 7. Schultz-Dale test performed upon the uterus of a guinea pig allergized to egg white, followed by an oral treatment with Egg Digest 11. There was no reaction following the addition of Egg Digest 11. A violent reaction followed the addition of egg white, indicated the presence of considerable quantities of antibodies. No reaction followed a second addition of egg white proved that the preceding reaction was specific. A final addition of posterior pituitary extract was made as a check upon the sensitivity of the uterus.

TABLE VIII. GUINEA PIG 519 ALLERGIZED TO EGG WHITE; TREATED BY ORAL ADMINISTRATION OF EGG DIGEST 11; FOLLOWED BY SHOCK DOSE OF EGG WHITE

Intraperitoneal injections of 0.1 c.c. of 50 per cent Egg White in Saline.
Treatment: By mouth, 5 mgs. of Soluble Nitrogen Digest 11 + 0.2 grams of Glycyrrhiza + 2.0 water.
Sixty-six hours later
Shock Dose 1 M.L.D. of Egg White = 0.1 c.c. of 1 per cent Egg White (0.02 mg. soluble nitrogen).
Shock Dose—1 M.L.D.—Animal died in six minutes with anaphylactic symptoms.

SUMMARY

Food propeptans are food digests derived from the individual foods through prolonged digestion with hydrochloric acid and pepsin, followed by some slight additional digestion with trypsin. While these preparations are devoid of any native protein, they contain type-specific proteoses and peptones which have the capacity of giving highly-sensitized animals full protection against anaphylactic shock.

SUMARIO

Los alimentos propeptonas son alimentos digestivos derivados de alimentos individuos después de una digestión prolongada con ácido hidrolórico y pepsina y seguida por una digestión adicional ligera en pepsina. Mientras estas preparaciones no contienen ninguna cantidad de proteína

(Continued on Page 439)

ALLERGY IN MEXICO

MARIO SALAZAR MALLEN, M.D., F.A.C.A. (Hon.)

Mexico City

I WISH to express my sincere admiration for the endeavors of the founders of the American College of Allergists in setting forth measures to unite all those interested in the advance of medicine and allergy. I also wish to convey my deep appreciation to the American scientists whose contributions have given to this country an outstanding and well-deserved place in science in general and medicine in particular. We know that the benefits of scientific research in medicine have no frontiers, and I am certain that the advances made in your clinics, universities and laboratories will reach humanity, their ultimate goal.

To talk of "Allergy in Mexico" does not mean that I shall show you the oddities seen after having practiced for eight years privately and as chief of the only free clinic devoted to the study of allergic patients. Neither shall I insist upon giving figures, percentages or tables to enlarge upon what I and my associates have encountered in our people. Allergy in Mexico cannot be very different from what it is in Colorado or La Habana, and there are only those local peculiarities which you very well know.

To begin with, I can state that allergic diseases are very common in my country, since a city of around two million inhabitants has within a small interval of time given me the opportunity of diagnosing some 3,000 cases, mostly sufferers of "major allergies." Of this figure, 1,000 belong to the charity clinic at the General Hospital where there is a constant demand for more diagnosis and treatment than we can provide, owing to the lack of sufficient personnel and facilities for clinical examination. I am pretty certain that in the very near future, the opening of our new unit devoted to nutrition and allergy will give us a pronounced increase in this type of patient.

It was, and still is, claimed that high altitudes do not produce asthmatics, but we see in Mexico City at some 7,000 feet above sea level many asthmatic sufferers of the allergic, infectious and intrinsic type. The material studied privately gives the distribution in relation with diagnosis of the different allergic syndromes shown in Table I.

Some authorities have stated that our latitudes and altitude make the pollinosis unimportant. I have also read that ragweed does not flourish in the valley of Mexico. This statement must be challenged, and I think that you all will be interested to know that pollens do exist in the air of Mexico City and also that ragweed (short) is seen shedding pollen everywhere in field or yards from July to September. It must be explained, however, that our ragweed pollinates when the rainy season is heavy, and therefore we never have recorded more than 25 grains per square centimeter a day (we still find practical the sedimentation counts).

ALLERGY IN MEXICO—MALLÉN

TABLE I. MAIN ALLERGIC COMPLAINTS IN PATIENTS SEEN IN PRIVATE
PRACTICE (1,687 Cases)

Respiratory allergy (includes vasomotor rhinitis, allergic cough and bronchial asthma)	1027	(62%)
Pollinosis	104	
Urticaria (includes angioneurotic edema and other allergic erythemas).....	300	(17%)
Eczema and other forms of allergic dermatitis.....	207	(12%)
Migraine (includes other allergic headaches, nervous symptoms and histaminic headache).....	97	(5%)
Gastro-intestinal allergy (as main complaint).....	56	(2.5%)

During the dry wintertime, the cedar tree (*Cupressus Benthani*) sheds an important amount of pollen, but the most significant and troublesome irritant at this season is ash (*fraxinus vir.*), since this tree adorns our parks and important avenues and streets. Pollen of green ash is seen from the beginning of November, not disappearing until the end of February. Counts reach as high as 100 grains per square centimeter a day or more.

In the valley of Mexico, these might be considered the most vexatious plants, but Bermuda grass is so widespread from very early March to the middle of August with its pollen grains seen in rather scarce amounts (from 2 to 10 grains) that cases with long and very bad symptoms are also encountered.

Cosmos and sunflower cause symptoms during the autumn and a few persons have positive reactions related to the floral characteristics of the seasons to *Amaranthus retrorflexus*, alder, oak and rye grass. We have plantain, poplars and willows, but their season is rather short, and I have not seen patients with symptoms originating from these latter. Australian pine and true pine shed huge amounts of pollen, but so far, I believe as do many of our American colleagues that *casuarinae* and pine tree are not very allergenic plants. Local flora, such as *schinus molle* and *cactaceae*, do have pollen but this is not transported through the air, and I have never had occasion to be suspicious of them. The following table records the cases of pollinosis seen in the Republic of Mexico and in inhabitants of Mexico City itself (Table II).

More important in our asthma and coriza cases is dust; we do encounter plenty of pure dust and associate dust cases. Feathers are also important and once in a while offer the pleasant surprise of being the only offender. Orris root is also significant; less so, other epidermals and miscellaneous.

Foods as causes of respiratory symptoms are of utmost importance. Secondary to dust many cases react cutaneously and clinically as food sensitives, the main offenders being cereals, the most important of which is corn, followed by wheat and rice. I seldom see oats or barley or buckwheat cases, but of course you well know the reason; corn is vastly used as food among us; it is the foundation of *enchiladas*, *tortillas* and other dishes less known to you, but it is and always has been our favorite food staple. Rice is also a favorite, whereas bread occupies a less significant place in our diet. Rye and buckwheat are rarely consumed, so they are not important. Following the cereals in importance, we have chocolate, peanuts and meats. Milk is troublous, but eggs are far from being important

ALLERGY IN MEXICO—MALLÉN

TABLE II. POLLENS AS CAUSES OF ALLERGIC (RESPIRATORY) SYMPTOMS

Pollen	Cases	From Mexico City	Other States
Bermuda grass	37	26	Nuevo Leon * Coahuila Chihuahua Sonora Sinaloa &
Ragweed (short)	36	20	Nuevo Leon Tamaulipas Sonora Sinaloa Oaxaca Michoacan
Johnson grass	16	none	Coahuila Chihuahua Sonora Sinaloa Jalisco
Green ash	14	14	
Pigweed	7	none	Sonora Sinaloa Michoacan
Russian thistle	4	none	Chihuahua Nuevo Leon Sonora
Cedar tree (Cupressus b.)	3	3	
Other pollens: Slender ragweed False ragweed Cosmos Sunflower	12	7	Sinaloa Sonora Tamaulipas Chihuahua

allergens. Vegetables are significant as secondary offenders, and beans (frijoles) have a well deserved place in exciting allergic symptoms as well as large and even general reactions. Our native fruits, with the exception of the mango, do not seem to cause trouble. Our fruit cases are usually nuts, orange, lemon and banana.

Bacterial symptoms are indeed found, especially giving origin to acute asthmatic and status asthmaticus symptoms, but sinusitis does not seem to be so widespread in our patients.

We do see spores in our slides and test our patients with alternaria, hormodendrom, fusarium, rhizopus, candida, aspergillus and mucorinea. Reactions are seen, and some patients seem to improve when spore extracts are applied to them.

Outside of Mexico the respiratory allergy changes in a noteworthy way: asthma and pollinosis are very prominent factors in our border and Pacific Coast states. Allergens are local; most of the patients improve after coming higher to our plateaus or even removing from the Pacific coast. The first are more likely simple pollinosis, such as Johnson grass, timothy, Bermuda grass, Russian thistle, Amaranthus, slender ragweed, false ragweed. Many other allergenic plants must exist in the fields of our north-western states, but we are still awaiting the opportunity of securing co-operation for making a botanical survey. The second type of patient who improves only upon getting away from the seashore would seem to offer

evidence that the ocean climate is the cause of symptoms present. He is a different problem, as he usually fails to show sensitivity to pollens, is slightly sensitive to dusts and gets no results from dust treatment. Following the studies of Jimenez Diaz, we believe that asthmatics from the coast may be sensitive to fungi, but our own fungi extracts have not yet solved the problem. Patients from the Gulf coast have interesting features; some from the northern part are truly sensitive to pollens of local importance such as short ragweed or Bermuda grass, but many belong to cities along the seashore or inhabit towns inside the coast itself which are characterized by being damp and hot. Patients from these latter places often complain of feeling the barometric fall and of getting invariably worse when north winds blow and the sky is clouded. I have visited some of the very asthmogenic localities with this type of patient and have been impressed by the many sufferers with the above characteristic who suffer only if they remain in their own localities. The allergenic flora of these places includes Bermuda, Rumex and some compositae, but patients fail to react to any of them. Fungi have been suspected of being the cause of trouble among these sufferers and some results have been obtained with local fungi. Mucorinea and Aspergillus, in particular, encourage research along this line.

Skin allergy occupies second place in its frequency in our material, urticaria and dermatitis running parallel. Contact dermatitis is seldom seen, probably because these cases remain in the hands of our able dermatologists. Urticaria, however, is always labelled allergic, and the allergist himself is often requested to find the allergen. With Dr. Taboada I have reported our experience with this nightmare of allergists. Even though we were far from identifying the causes of our patient's symptoms, we accepted a clinical distinction between our allergic, toxic and infectious cases. In practice, we believe to be allergic the patient who shows urticaria along with other allergic traits, and we consider it worth while to test him. Our toxic cases are so named if the basis of the skin symptoms seem to reside inside the body and particularly if we can find a near or remote cause of changes in the intestinal flora with or without prominent intestinal symptoms. We label infectious urticarias those which have infectious foci such as gall bladder, appendix, teeth or tonsils which might be incriminated of either sensitizing or, less likely, intoxicating the patients. Allergic urticarias tend to be paroxysmal and associated with other allergies. Infectious and toxic urticarias may be of the "intrinsic" type, but the first are connected with cholecystitis, sore throat and so on, and the latter we relate to not very obvious intestinal changes. This classification is only clinical and for clinical use. We are still waiting for a better understanding of common hives.

Dermatitis flexuralis is seen, as a rule, in atopic people. Contrary to the opinion of some authorities, we do consider it worth while to test them, and in our very limited experience the allergic investigation of these patients produced gratifying results. "Ids" are indeed seen! fungides are

ALLERGY IN MEXICO—MALLÉN

very common in hot weather; other microbids are much rarer, but not absent.

Circumscribed neurodermatitis is not frequent, but presents considerable difficulties in its causal diagnosis except in cases of associated allergies.

Even though morphology may be typical of certain "ids," allergies or parasitic dermatosis, we do not consider that a given localization excludes the existence of different or associated factors.

Migraine, nervous and gastro-intestinal symptoms are also often observed, but I do not deem interesting a résumé of details that are well known to you. Migraine is often allergic, but psychosomatic symptoms play an outstanding role. I have seen interesting cases of cerebral symptoms related to allergy associated with urticaria and migraine, which cleared nicely upon testing and eliminating the offending foods.

My experience is limited in allergic purpuras or other allergic symptoms.

In relation to treatment, very few points deserve consideration, since our methods are not fundamentally different compared with yours.

Allergic patients are treated specifically whenever feasible, and good results are obtained by hyposensitizing with dusts and pollens. Results are less encouraging by injecting specific foods, but hyposensitization is always tried. Stubborn cases of asthma suspected of being purely intrinsic or bacterially intrinsic, after failure of diets and other general measures, receive roentgen therapy which gives satisfactory results to an important percentage of patients.

Nonspecific treatment of respiratory allergy is often used by injecting histamine and/or peptone by the intramuscular route; both drugs produce evident improvement to the allergic patient with exceptional undesirable side reactions. Tuberculin therapy is not a favorite procedure since our first attempts with its use did not convince us of its effectiveness.

Symptomatically we apply sympathomimetic drugs and, following the work of the continental authors, use ephyllin either orally or intravenously.

Skin allergies are treated topically whenever possible (dermatitis); infectious urticarias are handled when possible by treatment of the source of symptoms or by the cautious use of autogenous or heterogenous vaccines; toxic (intestinal) urticaria receives histamine treatment, and recently sulfasuxidine and other bacteriostatics.

Migraine seems to improve tremendously if the specific allergen is found and suppressed, otherwise there seems to be no drug available for its cure, and psychotherapy is resorted to in selected cases.

In closing, I wish to stress the importance of submitting to our colleagues of the College, our common experiences in the management of the allergic patient, and after constructive discussion I am certain that better understanding of our common problems will result in progress in treatment.

Editorial

OLD AGE SECURITY

We who are growing old in the field of allergy are beginning to feel the need of security as we are pushed by the young fellows coming up. Allergy is practiced by men of many stages of maturity, many degrees of skill, and that is as it should be. The thing that every society must watch is that the control of it does not pass into the hands of those who want security above everything else, who place prestige above service. When this happens, then these leaders will draw like-minded men to themselves to bask in the reflected glory of the society which they have founded.

As we have outlined in a previous editorial,[†] there is room for all the organizations now concerning themselves with allergy in America. There is no overlapping. The danger is that we shall not use to their full capacities all of these allergists, whatever their age and whatever their skill for the further development of American Medicine. There is a place for the strength of youth and the wisdom of age. There is no place for anyone or anything which insists on labeling each of us and filing each fact in the proper drawer. The only danger that faces allergy in this country is regimentation and hardening of the arteries in its leaders. The fact that we appear to some to be over-organized is our salvation in this time of need. What we need is living room and the opportunity to make mistakes.

—JONATHAN FORMAN

RESEARCH FELLOWSHIPS AVAILABLE IN CONSIDERATION OF STANDARDIZATION OF ALLERGENIC EXTRACTS

The Board of Regents of the American College of Allergists has just made available one fellowship paying up to \$1,500 a year, to continue for two years. This fellowship is at the disposal of the Standardization Committee and will be used to augment research directed at gaining fundamental knowledge necessary for the development of satisfactory methods for the standardization of allergenic extracts.

The Standardization Committee would appreciate hearing from anyone who is, himself, interested in this work, or who knows of anyone else so interested. It is important that a competent Fellow be selected and be placed in a laboratory where facilities, both intellectual and physical, are most conducive for carrying on successful research. Anyone interested or having information bearing on this matter should communicate with Dr. George E. Rockwell, 2500 Melrose Avenue, Cincinnati 6, Ohio.

Let us all consider the great importance of this subject and make every effort to have competent individuals apply for this fellowship. In addi-

[†]See page 26, issue of January-February, 1944.

EDITORIAL

tion to the members and Fellows of the College, we invite other men interested in allergy or its allied branches of medicine to co-operate with us in this endeavor, as we all appreciate the great need for a satisfactory method of standardization of extracts. The opportunity offered in such a fellowship is unlimited and should hold a bright future in allergy for further research work.

Since the funds for such research are limited and there is a great need for two such fellowships, it is hoped that members or friends of the College, who are in a position to do so, will aid in this most urgent and valuable function of the organization when advancing our progress in allergy.

J. WARRICK THOMAS, M.D.

Allergic Occupational Dermatitis in Our War Industries

(Continued from Page 395)

Hardening or the development of a state of hyposensitivity by continued exposure to the sensitizing chemical has been repeatedly observed in industry. It was because of such observations on Dr. Schwartz's part that the workers in the munitions industries were allowed to continue with their work, in spite of the fact they had developed a dermatitis. The mechanism of the production of this relatively lessened sensitive state needs further study. It does not take place with equal facility with all chemical sensitizers; while it usually occurs in those moderately sensitive, it may fail to appear in those apparently very little sensitive, and may be of very striking and unexpected phenomenon in some extremely sensitive individuals. It is acquired by continuous exposure which has to be guided and it is lost by most individuals when exposure is discontinued.

Hardening is not ordinarily seen in civilian life because the exposure is not continuous or great enough in most instances and when sensitivity occurs only the more sensitive usually consult the physician. It is the worker with marked sensitivity who is among the group who do not become hardened.

If a practical plan for inducing a state of hyposensitivity in allergic contact dermatitis could be worked out, it would be of great help not only in industry but in all walks of life where such allergic contact dermatitis is encountered.

Experimental Approach to Oral Treatment of Food Allergy

(Continued from Page 432)

nativa, contienen un tipo específico de proteosas y peptonas que tienen la capacidad de dar una completa protección contra el choque anafilático a animales intensamente sensibilizados.

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Progress in Allergy

Under the direction of ETHAN ALLAN BROWN

PEDIATRIC ALLERGY A Critical Review of Recent Literature

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DISORDERS ASSOCIATED WITH OR COMPLICATING ALLERGY

A GENERAL REVIEW of the subject of the exudative diathesis has been published by Czerny¹², one of the foremost proponents of this conception. He states that newborn infants who require a long time to make up their initial loss of weight, despite sufficient intake of protein, usually develop signs of the exudative diathesis. The earliest signs are intertrigo, the "milk crust" on the scalp and face, and the condition most commonly termed seborrheic dermatitis, though true seborrhoea does not appear until puberty. The lesions appear to be due to an increased pressure of the tissue fluids. Intertrigo, which appears in body folds, is primarily due to this and not to lack of cleanliness, although cleanliness is an important factor in treatment. Erythroderma desquamativa is not a part of the exudative diathesis. The clinical manifestations of this diathesis diminish with dehydration, and limitation of fluids to minimal requirements is a basic principle of treatment, as is also the early interruption of exclusive milk feeding. The fat in the milk is not necessarily a factor. Concomitant with the exudative diathesis may appear lingua geographica, strophulus,* and hypersensitive mucous membranes of the upper respiratory passages. In this country, the consensus, with which I am in complete agreement, is that the more modern concept of the allergic state has replaced the older theory of the exudative diathesis and certainly offers a more hopeful approach for the study of the basic factors which are responsible for the clinical manifestations.

McGee³⁶ has reported on the significance of fetal hiccoughs and states that these were first described by Ahlfeld in 1903. McGee has collected a series of twenty-one cases of definite hiccough-like spasms in the unborn fetus. The onset varied from four and one-half months of pregnancy to about one month prior to delivery. The hiccough-like spasms recurred about every five seconds, lasted a few minutes and could be palpated as well as heard with a stethoscope. There was a history of allergy in seventeen of the mothers; in ten cases the allergy was gastro-intestinal. Most of the infants after delivery developed allergic symptoms early; ten were clinically sensitive to cow milk. In about 25 per cent of the cases it was possible to produce hiccoughs in the fetus by feeding the mother a particular food. When fetal hiccoughs are observed, the obstetrician should inform the pediatrician so that all precautions will be taken to discover and treat allergic manifestations as soon as possible.

Salmi⁴³ has published a general report on seventy-two cases in follow-up studies of pylorospasm in infancy, observed in the University Children's Hospital of Hel-

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*Strophulus is a rather inexact term to denote what we term lichen urticatus, a form of urticaria of unknown origin peculiar to infants and children, which disappears spontaneously at puberty. It is apparently much more common in Europe than in this country.

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sinki, Finland. The cases include those of pyloric stenosis and ranged in age from five months to twenty-one years. Sixty infants and children were observed with special reference to cutaneous allergic manifestations, as eczema, urticaria and strophulus, which occurred in about one-third of these cases as compared with an incidence of the same conditions in one-quarter of a series of 100 control cases. This difference, I believe, is not statistically significant.

Mao³⁵ reviewed the results of cutaneous skin tests for allergy on 535 resident pupils in the Pennsylvania School for the Deaf. Positive reactions were found in 28.5 per cent while only 2 per cent showed definite clinical manifestations. He stated that the figure for deaf children is 27.41 per cent higher than for the largest numerical group of normal children reported. Curiously, the percentage of positive reactions was practically identical, whether the deafness was congenital (biologic) or acquired. He stated that it is not unreasonable to assume that allergy and deafness have some mutual hereditary background.

Straub⁵⁰ published a most interesting communication on the subject of the frequency of allergy in orthodontic patients. A series of 144 children, fifty-eight female and forty-six male, under orthodontic treatment, was studied. Forty-one (39.4 per cent) were found who had chronic nasal allergy. This high percentage of allergic patients with the typical picture of nasal blockage and paranasal depressions, pinched nares, contraction of the maxillary arches with protrusion of the anterior teeth, receding chins and lack of development in facial growth, suggests that in most cases of nasal blockage, allergy must be suspected and considered definitely related to the development of the dentofacial anomalies. In seven cases (17 per cent) of these children, allergic gingivitis was diagnosed. No relationship was found between allergy and the presence or absence of lactobacilli. The author agrees with those who urge the early diagnosis and treatment of nasal allergic conditions as an important method of reducing the incidence of dentofacial anomalies.

Under the term of "asthmatic pseudo-rickets," Bock⁵ has described the deformities of the thorax occurring in children with asthma. The chief differences in appearance from true rickets in these deformities are that in this condition the upper transverse diameter of the thorax is greatly narrowed, while in asthmatic pseudo-rickets, the upper transverse diameter is greatly enlarged. This gives, roughly speaking, in both instances a pear-like appearance to the trunk. In asthmatic pseudo-rickets, the larger portion of the pear corresponds to the upper thorax while in true rickets, the pear appears inverted with the larger portion of the pear corresponding to the commonly distended abdomen below the flaring lower costal margins. In both instances the basic mechanism is the same, i.e., the effect of respiration under abnormal conditions. In rickets the primary factor is the softness of the thoracic cage itself undergoing a response to normal muscle pull; in asthmatic pseudo-rickets the primary factor is the abnormal muscle pull on the thoracic cage.

Hansen-Pruss and Goodman²⁸ employ the term "allergic pulmonary consolidations" to designate the clinical picture most commonly described under the term of "Loeffler's syndrome" which does not give a clue to the allergic origin of the condition. Six cases are discussed in detail. All cases occurred in adults excepting for one, a boy, one year old. Severe asthma, often of long standing duration, was the outstanding presenting symptom. In general the syndrome of allergic pulmonary consolidation is featured by: (1) varying degrees of pulmonary consolidation, at times multiple, often migratory and recognized by roentgenographic examination of the chest; (2) its occurrence in allergic individuals; (3) a varying leukocytosis and eosinophilia; (4) an afebrile course; (5) persistent severe asthma; (6) lack of response to known sulfonamides, and (7) history of frequent upper respiratory infections.

Field¹⁸ describes the case of an asthmatic girl four years of age who, on admission to the hospital following a severe attack of asthma, had subcutaneous emphysema

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extending around the neck, on the face and over the chest, abdomen and thighs. A roentgenogram showed collapse of the left lower lobe. Ten days later she developed a right sided pneumothorax with massive collapse of the left lung and partial collapse of the right upper lobe. The child made a good recovery.

Hansel²⁶ observed that chronic sinus allergy in children is not infrequently complicated by infection. The most definite and reliable diagnostic feature in differentiating allergy from infection is the examination of the nasal secretions for eosinophilia, observing the relative proportion of these to the neutrophil cells.

Brown⁷ reported a case of eczema vaccinatum in a five-month-old boy who had had eczema since the age of one month and had been exposed to a previously vaccinated sister. Sulfathiazole was used orally and locally. The temperature returned to normal in about seven days while the lesions healed. Brown states that the use of the sulfonamide drugs in treating this condition has been an important factor in lowering the mortality rate though the mechanism by which this may be helpful is not completely understood. They may possibly act by eliminating the secondary infection. She also stresses the importance of avoiding any exposure of an unvaccinated child with eczema to vaccine virus in any way, however indirect.

Wenner⁵⁵ states that the most common filterable virus which occasionally complicates eczema is the virus of vaccinia. In 1877 Kaposi described a rare type of eruption occurring as a complication of infantile eczema. He saw 10 cases of this varicella-like eruption which had not been previously described and called it "eczema herpetiforme." Wenner described 3 cases in infants, two girls aged five and eight months, respectively, and a boy aged 20 months. The disease is characterized by an eruption which passes through the stages of papule, vesicle, pustule and crust. The lesions appeared in crops, had a transitional course lasting seven to ten days, and in two of the infants spread by confluence to attack *en masse* large areas of skin. During the first week of the disease new vesicles, which also quickly became purulent, appeared, scattered among the pustules. The mucous membrane of the mouth was the seat of small, reddened ecchymotic lesions up to 2 millimeters in diameter. There was fever and a relative leukopenia. One infant died with symptoms of encephalitis but this condition could not be confirmed by necropsy. The chief differential diagnosis would appear to be from eczema vaccinatum. However, from all three of the author's cases a virus similar to, if not identical with, the virus of herpes simplex was isolated.

IDIOSYNCRASY

Bass³ reported three cases of sensitivity to mercury. One occurred in a boy ten years of age who developed a rash from accidental contact with metallic mercury. The second was a girl fourteen years of age with a history of eruptions following the use of calomel at four years; later she developed a rash from blue soap presumed to contain mercury, and at the age of seven years developed a rash from ointment containing yellow oxide of mercury. At the ages of twelve and thirteen years she developed an eruption on her lips and cheeks when some teeth were filled with a mercury amalgam. At the age of fourteen years mercury amalgam fillings were again used, and a week later she developed generalized urticaria. After three weeks without relief from various forms of therapy, the amalgam fillings were removed. This was followed by an acute exacerbation of the symptoms, but within twenty-four hours the symptoms subsided and the child remained completely well. A passive transfer test was positive when the site was rubbed with ammoniated mercury; a control site was completely negative. A third case was a girl known to be sensitive to ammoniated mercury who developed a swelling of the lips with a rash about the mouth and cheeks following an amalgam filling. The filling was not removed and the rash disappeared two

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days later. The literature on the subject of idiosyncrasy to mercury in amalgam fillings is well reviewed.

Gibel and Kramer²¹ point out that the value of mercury preparations in children is beyond question and their widespread use for many generations with relatively few reports in the literature of harmful action attests to the relative safety of the preparations. Reactions caused by locally applied mercury preparations are to be considered as true idiosyncrasy and not as poisoning. The authors report a case in a twenty-two-month-old girl who was treated for impetigo with 5 per cent ammoniated mercury ointment. Eleven days after treatment she developed a severe, generalized erythematous morbilliform eruption diagnosed by one physician as measles and by another as scarlet fever. She was hospitalized and the skin returned to normal after twenty-four days. The second case is reported in an infant 14 months of age whose diapers were rinsed in 1:4000 bichloride of mercury solution. After six days' use, he developed a diaper area erythema and induration, fever, and a generalized macular rash resembling measles in the less confluent areas and scarlet fever where the rash was confluent. Later blebs appeared. The skin returned to normal in about fourteen days. The authors point out that it is not unusual for a patient to be susceptible to one compound of mercury and not to another, and that the same patient may get different types of reaction depending upon the compound of the drug used. The interval between the application of the drug and the appearance of the eruption varies between one and twelve days. The treatment is symptomatic. Twelve cases of idiosyncrasy to ammoniated mercury have been reported from 1883 to 1942. No case of death caused by local application of a mercury preparation to the unbroken skin has been reported.

Scott⁴⁶ reported two cases in which severe reactions to ephedrine occurred although both cases had been treated previously with ephedrine without ill effects. A twelve-year-old girl, following the use of a 1 per cent ephedrine solution in the nose, developed a severe reaction consisting of chilliness, dryness of the throat, palpitations and restlessness. A boy six years of age who followed his usual practice of taking ephedrine for an asthmatic attack, developed a severe reaction characterized by restlessness, anxiety, thirst, rapid pulse and respirations. Scott could offer no explanation for the occurrence of these reactions. I cannot agree with Hansel's²⁵ explanation that the doses taken were overdoses and that $\frac{3}{8}$ grain (25 mg.) is a very large dose for a child. The doses which Hansel recommends, $\frac{1}{8}$ grain (8 mg.) for a child and $\frac{1}{4}$ grain (16 mg.) for an adult are entirely inadequate in my practice except in those few instances where experience has shown that small doses are adequate for relief.

ETIOLOGICAL FACTORS

Simon⁴⁷ has reported evidence showing the etiological significance of human dander in the pathogenesis of infantile eczema. The evidence consists of: positive skin reactions to patch tests with human dander in fifteen of twenty infants and young children with eczema, whereas in twenty-three control cases there was only one positive reaction to the patch test; the fact that all children are exposed to human dander, either from their own scalps or from those of parents or others with whom they come into contact, the prompt clinical improvement in three of four cases following the institution of measures directed at the avoidance of contact with human dander and reproduction of the lesions at will in four cases out of four attempts on a previously uninvolved skin area by exposure of this area to contact with human dander.

In another communication Simon⁴⁸ describes methods of preparing the dander for scratch, patch and intradermal testing. He suggests that possibly the contact re-

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action to human dander represents the so-called "seborrheic element" of infantile eczema and that this element is in reality an allergic, probably atopic, response to surface contact with human dander having its source chiefly in the scalp (and secondarily on the clothing, et cetera) of parents and others, possibly even the child itself. The work reported, if confirmed by other investigators, should be of considerable assistance to the pediatric allergist in clearing up many cases of infantile eczema which have hitherto resisted treatment. It also makes it imperative to consider this factor in controlling the environment of all eczematous infants and offers another explanation of an environmental factor from which the eczematous child is commonly relieved when removed from the home atmosphere to that of a hospital. Possibly much the same could be said for the work of Horesh²⁹ who pointed out that the importance of the fact that foods may act as inhalants and produce allergic symptoms has not been sufficiently emphasized in the management of infantile eczema. He reported nine cases collected over a period of seven years in infants and children due to food odors. Acute exacerbations occurred in five cases when eggs were opened in the presence of the child; in one case when the child was exposed to the odor of freshly dressed fowl; and four other cases due to the odor of frying fish, pork and bacon, respectively, and one from the odor of cooking cabbage. In all cases the child gave positive skin tests to these allergens by the scratch method from 2 to 4 plus. The author suggests that exposure to odors should be sought as a possible cause of otherwise inexplicable exacerbations, especially where the patient has not responded to the prescribed elimination diet. It is not commonly practical or necessary to keep all the reacting foods out of the house. It is usually sufficient to keep the child out of the kitchen where the food is being prepared. The possibility of sensitizing allergic children by food odors must also be considered. Horesh³⁰ further reported the case of a boy who had had eczema and who developed asthma at the age of two years. He gave, among other positive tests, a 4 plus reaction to white potato. A severe attack occurred when he went into the kitchen where white potatoes were being peeled. An attack was also produced when canned potatoes were opened in the house. The boy's asthma disappeared on complete removal of white potatoes from his environment.

PROPHYLAXIS AND TREATMENT—GENERAL CONSIDERATIONS

Cooke¹⁰ states that atopic asthma is the type most frequently encountered in infants and children and young adults and its onset is rare after the age of forty; infectious asthma may occur at any time from infancy to old age. Children up to eighteen years need little attention to the sinuses, if recurring infections can be controlled. The early removal of infected tonsils and adenoids is one of the best means of control. As sedatives in asthma, appropriate doses of codeine or pantopon may be given children when necessary. If these drugs produce vomiting at first, so much the better, for it is more effective than coughing in removing mucous plugs. For the definite purpose of producing vomiting in children, however, syrup of ipecac in doses of one-half to one teaspoon may be given.

Criep¹¹ has emphasized the facts commonly accepted by allergists, that the treatment of hay fever in children is an effective prophylactic measure against the development of bronchial asthma; that children can tolerate the same dosage of pollen extracts as adults; and that no child is too young to take pollen therapy. Unger and Wolf¹² also emphasize prophylactic measures and early study in bronchial asthma, pointing out the fact that the best results obtained in the treatment of bronchial asthma are in those cases in which the condition is treated during the first decade of life.

Hurst³², reviewing the etiology and treatment of bronchial asthma in childhood, concludes that "every asthmatic can derive much benefit from good advice. He can be taught a way of life; how to avoid the exciting causes of his particular brand

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of asthma; how to control attacks he is unable to prevent; and, above all, how to be happy in spite of the bad luck of having been born with the asthma diathesis." Rogerson⁴² states that the asthmatic child has a special personality type with above the average intelligence. He is apt to be irritable, aggressive, quick to respond, over-anxious, insecure and lacks self-confidence.

Schwartzman, Dragutsky and Rock⁴⁵ studied a series of 128 absolutely healthy children (boarders) who were admitted to the hospital for reasons totally unrelated to their health. One hundred and eleven were younger than two years of age. In the group younger than two years of age superimposed illness (morbidity) occurred in 6.36 per cent of cases, chiefly upper respiratory infections. There was no mortality, and in the group older than two years of age, there was no morbidity. The morbidity of 6.36 per cent in boarders younger than two years of age is compared with a morbidity of 66.6 per cent in infants admitted to the same hospital because of uncomplicated infantile eczema. This is very close to the morbidity reported from Milwaukee (58.9 per cent) but almost twice the morbidity reported from Rochester, New York (31 per cent). The contrast in the morbidity and mortality figures between true boarders and eczema in the hospital was marked. This fact seems to show that although the true boarder was exposed to dangers and was susceptible, he was not as vulnerable to infection as was the child with eczema, whose resistance was apparently impaired. This confirms the impression that the condition of the skin plays an important role in resistance to infections. It is concluded that healthy children should not needlessly be admitted to a hospital and particularly that children with eczema or with any other skin condition which can be treated at home should not be hospitalized.

GASTRO-INTESTINAL AND FOOD ALLERGY

Fries and Mogil²⁰ studied thirty children following the ingestion of barium meals containing foods to which they were sensitive. The most frequent gastric findings were hypotonicity with delayed emptying. Alterations in the small intestine pattern were infrequent and when present consisted of increased segmentation or, in rare cases, of accelerated motility. Hypertonicity of the transverse and descending colon was an infrequent finding. Rectal instillations of allergen-barium mixtures produced constriction of the colon, or occasionally dilatation. Proprietary barium mixtures containing small amounts of flavoring food stuffs produced changes in the roentgenograms of children sensitive to those foods.

McKhann, Spector and Meserve³⁸ report that evidence of gastro-intestinal allergy was found in four cases of celiac disease, two of which showed positive skin tests to banana. Elimination of the suspected foods resulted in definite improvement and in an increase in absorption of fats and glucose from the gastro-intestinal tract. Two cases of gastro-intestinal allergy in which the symptoms were suggestive of celiac disease, both of whom gave many positive skin reactions, were improved by elimination of the suspected foods. They conclude that it is likely that gastro-intestinal allergy bears a causal relationship to the celiac syndrome.

McLendon and Jaeger³⁹ listed the symptoms in the syndrome of milk intolerance as follows, in the order of the frequency with which they occur: constipation, anorexia, abdominal discomfort, pallor, a fatigue complex with lassitude and poor posture, disturbed sleep, recurrent diarrhea, respiratory disturbances and urinary disturbances. The characteristic features of the history obtained in such cases are: a family history of allergy, excessive milk ingestion during the latter months of gestation, early ingestion by the infant of cow's milk, the colic syndrome, frequent formula changes with transient relief following such changes, the usual treatments for constipation in infancy, and less acute symptoms as time goes on and solid foods are added, and development of the symptoms listed above as the child develops. Curiously eczema was not of common occurrences in this series. Geographic tongues

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were found in about 10 per cent of the cases and in some instances could be produced at will by giving a particular food. Treatment of the entity described was by the elimination of milk which resulted, in most cases, in dramatic improvement.

In the treatment of allergy to cow milk, the best substitute for human breast milk has been soy bean milk. None of the other substitutes as those made from nuts, poppyseed, taro flour, hydrolized casein, and various other foods, principally carbohydrates, has been completely adequate. This is unfortunate since with the ever-increasing use of soy bean as an article of diet and in industry sensitivity to this substance may be expected to increase. At the suggestion of Dr. Albert H. Rowe of California, the Clapp Company of Rochester, New York, prepared a number of very finely strained meats. Glaser^{23,24} describes their use as the protein basis for milk substitutes in formulas which permit great flexibility with complete satisfaction of protein requirements. These preparations will not be commercially available until after the war. In his report the method of use of such meat-milk substitutes is described and case reports given. It is suggested that theoretically the perfect meat base for an artificial milk for human infant would be human muscle tissue.

In Ratner's discussion of Glaser's paper²⁴ he states that he has found evaporated milk very effective in the treatment of the milk sensitive child; that when evaporated milk fails to relieve the milk sensitive eczematous child other factors must be sought, especially environmental factors; that the treatment of secondary infections must be carried out and that existing constitutional factors, as hypothyroidism, must be corrected. In my experience cow milk sensitive infants who can tolerate evaporated milk or any other form of cow milk are very uncommon. It is my feeling that most of the reluctance to the use of cow milk substitutes arises because of the impression that cow milk is a "natural" food for human infants. I should like to point out that cow milk is not a natural food for human infants but is designed primarily for calves. The only natural food for the human infant is human breast milk, at least during the first few months of life. That perfectly normal children may be raised from birth without ever having taken any animal milk of any kind has been demonstrated repeatedly. Other factors than food often cause eczema but I particularly dislike to see practically every failure in the treatment of allergic children attributed to lack of proper "environmental control." Environmental control is important and new factors are constantly being discovered, as evidenced by the brilliant work of Simon^{47,48}, mentioned above, but the fact is that allergists are getting accustomed to hide their failures behind this term in much the same way that internists attribute so many of their failures to the "neurotic constitution" of the patient. While it is true that secondary infections may retard recovery from eczema, the treatment of such infections seldom presents any formidable obstacles. As regards hypothyroidism, I have never administered thyroid to infants because of eczema alone as I am not satisfied that eczema, unlike urticaria or rhinitis clinically resembling allergic rhinitis, can ever occur as a solitary clinical manifestation of hypothyroidism. In older children with eczema I have uniformly found somewhat reduced metabolic rates but have rarely seen improvement of the eczema as a result of feeding thyroid.

VITAMINS AND METABOLISM

The above discussed report on celiac disease³⁸, a condition accompanied by poor absorption of vitamin A, is of particular interest in connection with the report of diSant Agnese and Larkin⁴⁴, who found that the vitamin A absorption capacity was impaired in four cases of intractable infantile eczema. Each of these cases was characterized by retarded development, malnutrition, severe generalized eczema, marked lymphadenopathy, high blood eosinophilia, frequent respiratory infections, and refractiveness to lack and dietetic treatment. Vitamin A blood levels were determined before and after the ingestion of oleum percomorphum.

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The authors suggest that the respiratory infections and malnutrition observed in infantile eczema may be due to vitamin A deficiency resulting from a defect in intestinal absorption.

Harris and Gay²⁷ used the whole vitamin B complex in the treatment of infantile eczema. Of twenty unselected infants, an immediate improvement manifested by a decrease in pruritis and a tendency toward healing was noted in eighteen. However, in the final analysis, only two healed completely, eleven improved, and seven showed no change. Although many patients were known to be sensitive to certain articles of diet, no change in diet was made during this study.

Surányi⁵¹ reported good results using nicotinic acid and nicotinic acid amide in children in the treatment of urticaria, asthma, spastic bronchitis and less clearly in eczema. He gave 0.025 gm. to 0.05 gm. orally twice a day before meals. He stated that the drug seemed to be absolutely harmless. However, it would seem to me that 50 mg. of nicotinic acid would almost certainly cause symptoms in an infant while the amide might not.

Zahorsky⁵⁷ states that because of the fact that breast fed infants so rarely develop scurvy and that sensitivity to orange juice is rather easily acquired, the feeding of orange juice to breast-fed infants under four months of age is contraindicated. However, since it is known that the vitamin C content of breast milk is dependent upon the mother's diet, in accordance with many pediatricians I feel it advisable to give the breast-fed infant added vitamin C starting at the age of three or four weeks. Glaser and Landau,²² in 1936, advised the use of ascorbic acid instead of fruit juice in the prophylaxis of allergic disease. Since Bowen⁵ has called attention to the use of excipients in the commonly supplied ascorbic acid tablets which are subject to variation and which in themselves may sensitize, I have been using, in order to avoid this, capsules of crystalline ascorbic acid, with instructions to use the contents of a capsule, usually prescribing 50 mg. a day. The capsules are but very little more expensive than the tablets. Cane sugar or some other commonly non-allergic substance may be used as an excipient in the preparation of the capsules.

Howe³¹ states that some years ago Dr. R. A. Hetler called his attention to a syndrome frequently associated with nasal allergy in children and which she termed "hyponuclemia." The condition occurs most frequently in children under fourteen years of age and is due to a lack of nucleoprotein in their diet, or to some faulty digestion of nucleoproteins or to a nucleoprotein leak in some purulent discharge in the respiratory tract. To the symptom⁸ Dr. Hetler mentioned—distinct pallor, excess weight, appearance of pseudo-robustness, Howe added anorexia, sluggish mental and physical responses, indifference to play and surroundings, soft and unhealthy flesh, and a somewhat retarded growth. He states that patients with frequent recurrent colds will sooner or later develop hyponuclemia. Good results are reported on treating with nucleic acid, under ten years giving 10 grains or 0.65 gm.; over ten years 15 grains or 1.0 gm. in powder mixed with water, milk or orange juice, twice a day a half hour before meals. He also gives diet rich in natural sources of nucleic acid as, lean meats, all glandular tissues, whole cereals and green vegetables.

Donovan and Harsh¹⁵ experimented with controlled sodium and potassium diets in asthmatic and non-allergic children. They discovered that asthmatic children ingested slightly more sodium than did the non-allergic children on both the high sodium and high potassium diets. The plasma potassium concentration of the asthmatic children on the high sodium diet was slightly higher than it was on the high potassium diet, and slightly higher than the plasma concentration of the non-allergic children on either diet. The plasma sodium concentration of the asthmatic children on the high sodium diet was slightly lower than that of the non-allergic children despite a slightly greater intake. The asthmatic children excreted more

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sodium and more acid in the urine on both diets than did the nonallergic children. The acid base balance of the blood was not studied but the greater secretion of acid by the asthmatic children suggests that they might have shown a relative alkalosis.

PATHOLOGY

Larkin and his co-workers³⁴ note that while lymphadenopathy, which may be more or less generalized, involving even the mediastinal nodes, has been commonly noted in patients with eczema, they were unable to discover any reference to the histological appearance of the lymph nodes in infantile eczema. They observed that the degree of enlargement of the nodes is not necessarily related to the severity of the skin lesions but was most marked in those patients who fall into the group described by Hill as "atopic erythroderma." The characteristic histological picture was found to be replacement of the lymphatic tissue with proliferated reticulum cells, histiocytes and fibroblasts. Many of the histiocytes are lipophages and melanin and iron are present. Identical changes have been reported by Hurwitt under the name of "dermatophytic lymphadenitis" in lymph nodes removed from adults with chronic non-specific skin diseases characterized by pruritus. In the more severe cases the degree and generalized nature of the lymphadenopathy, together with the poor nutritional state of the infant and frequent high leukocyte counts suggested clinically a blood dyscrasia, or possibly Hodgkin's disease. The benign nature of the condition, however, is evident as the cases are observed over long periods of time, and the conclusions of those who have studied the condition, including Hurwitt and the authors, are that the adenopathy is of a benign reactive nature in response to the skin disease as an irritant.

Lamson, Butt and Stickler³⁵ have reported on the clinical and autopsy findings of eighty-two adults and four children with "fatal asthma." No evidence of "general lymphoid hyperplasia" was found in the case of the children. The authors agree with Tuft that "there is at present no known pathological picture, either gross or microscopic, which may be considered characteristic or pathognomonic of asthma."

SKIN TESTS

Albert and Walzer¹ have described a distinct type of contact reaction which occurs almost exclusively among atopic individuals, particularly children, and is elicited by application to the skin of oil-free allergens. One or more positive reactions were obtained in 75 per cent of atopic children with asthma, in 75 per cent with vernal catarrh, in 62.5 per cent with eczema and neurodermatitis, and in 60 per cent with hay fever. The high incidence of contact reactions in vernal catarrh is suggestive evidence of the atopic nature of this illness. Silkworm and feathers gave the highest number of positive contact reactions with almost equal frequency among the various atopic illnesses. Reactions to pollens tended to occur more frequently among patients with hay fever and vernal catarrh than among those with other allergic conditions. Allergenic foods rarely gave positive contact reactions. The clinical applications of this method of testing was not discussed.

Stoesser¹⁹ discussing skin testing, states that he prefers the puncture technique, using one to three punctures through a droplet of material. His experience confirms the generally accepted impression of the importance of the ingestants in early childhood, with the increasing importance of inhalants as age advances. He found that the reactions to milk, egg, and cheese were most significant in eczema; to meat, fish and nuts in asthma; and to cereals, dairy foods and chocolate in allergic rhinitis. Skin tests in urticaria were generally unsatisfactory, but if positive reactions were obtained to fruit, vegetables or nuts, they were usually of clinical significance. The size of the reaction is not always an index of its clinical importance. Positive

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reactions from animal emanations, and cottonseed were generally of value, regardless of the size of the reaction. An interesting finding was that in occasional instances localized areas were found where non-specific reactions occurred due to hyperirritability of the skin. Increased sensitivity to touch was found in these areas which had to be avoided in the interests of accurate testing. Farmer¹⁷ reported the analysis of results of cutaneous scratch tests on fifty patients with eczema in Australia. Horse dander was the most common offender in the inhalant group reacting in about half the cases. Next in frequency were house dust and feathers. Egg white was the commonest reactor in the food group, followed by wheat and milk. Wingard⁵⁶ studied the cutaneous reactions of nine patients to their own blood serum at varying intervals after ingestion of known offending foods. Delayed reactions were observed in six of the nine patients, indicating that the offending allergen was present in the blood. No reactions were observed in twenty non-allergic controls. It was concluded that the delayed reactions which followed the intracutaneous injection of autoserum in food sensitive individuals were due to the same substance which causes the clinical symptoms. Ditkowsky¹⁴ and associates report that sensitization to egg white, if it occurs via the placenta, would probably depend in a great part on a non-coagulable fraction (ovomucoid); since coagulated egg white would lose its characteristics during the process of digestion and would not reach the placenta in a form capable of stimulating immunological processes. The uncoagulable fraction could, however, reach the placenta and be passed over to the infant. The correctness of this theory might be proven by cutaneous tests on atopic children with the different fractions of egg white. Forty-six infants, half of whom were under one year of age, with typical atopic dermatitis were tested with egg white fractions and, incidentally, to chicken feathers. There were forty-one positive reactions to ovomucoid, forty to dried egg white, twenty-two to ovalbumin, seventeen to chicken feathers, fifteen to conalbumin, and 9 to ovomucin. These experiments would tend to bear out the thesis (since both dried and fresh egg white contain ovomucoid) that since ovomucoid is the most resistant of the egg-white fractions one might expect it to be responsible for and it is in fact the cause of the greatest number of positive reactions to cutaneous tests with egg white in infants and young children with atopic dermatitis. These observations also confirm the clinical fact that sensitization to egg white does not necessarily carry with it sensitization to chicken feathers or serum (conalbumin). It is also interesting in the above series that only six patients giving positive reactions to egg white were clinically sensitive to egg white. The others could be exposed to it without apparent harm.

DRUG THERAPY

Although the use of derivatives of opium is rather generally condemned by most allergists, nevertheless many, myself included, feel that these preparations do have a very distinct place in the treatment of bronchial asthma if given in properly selected cases and in small doses. In this connection, the introduction of the new drug, demerol, may be of considerable value because it appears to have most of the advantages of the alkaloids of opium without many of the disadvantages. This drug was discussed by Batterman and Himmelsbach⁴ who state that the preparation, a synthetic product, is closely related, structurally, to atropin and somewhat to morphine. Like the commonly employed narcotics it may be habit-forming. It possesses three chief reactions: analgesia, spasmolysis, and sedation. Unlike morphine, it does not endanger life and does not lessen expectoration. An acute attack of asthma in an adult can be relieved by the subcutaneous injection of 35 mg. Good results have been obtained using this amount with half the amount of epinephrine usually given the asthmatic individual. Thus far I have noted no reports of its use in children.

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Despite practically universal failure to find a use for histaminase in the treatment of allergic conditions, its effect continues to be investigated. Peshkin⁴⁰ and his co-workers stated that in forty-eight children with various allergic diseases who were given daily doses of 50 units of histaminase, no beneficial results were observed. Toomey and his associates⁵² reported that histaminase neither prevents nor ameliorates the serum sickness which follows the administration of meningococcus antitoxin (horse). However, the search for the philosopher's stone of allergic therapy continues. Wasson⁵⁴ employed ethylene disulfonate in the treatment of allergic children. The basis for the use of this preparation is a report by Bodman and Maisin in 1940 to the effect that an abnormality of carbohydrate metabolism is the primary cause of the allergic state and is due to the absence of certain catalysts of coenzymal activity in the body. They found that ethylene disulfonate fulfilled the requirements of such a catalyst *in vitro* and discussed the effects of the intramuscular injection of this drug. Wasson treated twenty allergic children using twenty others as controls under approximately standard conditions. He concluded that the treated group may have benefited sufficiently so that the drug deserves further study. Bartlett² treated 247 children with ethylene disulphonate. The patients ranged in age from four months to sixteen years and showed various allergic manifestations. There were no control cases and the author states that skin testing was not thoroughly carried out because he felt that this was unnecessary as well as unsatisfactory. While under therapy foods known to disagree clinically with the patient were omitted; the sugar in the diet was reduced and the fat usually increased. The following drugs, which are said to be contraindicated during ethylene disulphonate therapy were also omitted: barbiturates, opiates, anesthetics, alcohol, sulfa drugs and quinine and its derivatives. The dosage of the drug was 2.00 c.c. intramuscularly and a second dose was rarely given before nine weeks. The average number of doses per patient was 1.41. Satisfactory results are said to have been obtained in over 86 per cent of cases. On the animal experimental side, however, ethylene disulphonate has not done so well. Fisk, Small and Foord¹⁹ experimented with this preparation in guinea pigs sensitized by the administration of egg albumin. They concluded that statistical analysis of the mortality rate revealed that the differences were within the limits of standard error, and state that ethylene disulfonate does not protect guinea pigs against anaphylactic shock.

Dees¹³ treated forty-nine adults and six children with suppositories containing 0.25 gms. ($3\frac{3}{4}$ grains) of aminophyllin. Good relief was usually obtained within twenty minutes and one suppository morning and evening was usually sufficient to keep the patient symptom-free although in severe cases suppositories were used every four hours. The great advantages of this form of medication are that it takes effect rapidly, acts over a long period of time and can be administered by the patient. In using the suppositories recommended by Dees, I have found it occasionally useful to add a sedative, as seconal, to the suppository. One should not use cocoa butter suppositories in patients sensitive to chocolate.

Fabricant and Van Alyea¹⁶ reported on the use of privity hydrochloride, a new imidazoline derivative, which is crystalline and readily soluble in water or normal saline. In animal experiments they found that a 0.1 per cent solution had no detrimental effect upon ciliary activity. In normal subjects it caused no alteration of the pH of the secretions. There was no irritation of the mucous membrane or any toxic side effects as are sometimes noted with ephedrine. This preparation is available in two strengths, 0.1 per cent and 0.05 per cent. The weaker preparation is recommended for use in children and adults with particularly sensitive nasal mucosæ. It has become known[†] that in some children privity is capable of producing a definite sedative effect, which is now being investigated for possible therapeutic use in overly anxious or active children who are to undergo simple, painless

[†]Personal communication from the Medical Department of Ciba Products, Inc., Summit, N. J.

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procedures such as x-ray investigation requiring light sedation. This sedative effect has been seen only with the 0.1 per cent solution. It is my feeling that if a sedative effect of privity is discovered and does prove harmless that this would increase the benefits of its use for infants and young children, especially during the night when its decongestive effect in the conditions for which it is commonly used, together with sedation, would help secure satisfactory rest.

MISCELLANEOUS

Mclvor and Cherney⁸⁷ reported the clinical trial of a new flea antigen which appears to be effective in desensitizing some individuals sensitive to flea bites. Among the cases reported was that of a three-year-old girl who suffered from asthmatic attacks with urticaria. The mother believed these manifestations to be due to flea bites. During the clinical trial of the flea antigen, the child received a series of injections, each resulting in an asthmatic episode. She is said to have been greatly benefited by the treatments.

Conner and Milzer⁹ observed that attacks of urticaria occasionally occurred in patients convalescing from scarlet fever. When there was no apparent cause, such as scarletinal antitoxin or possibly human convalescent scarlet fever serum administration, food allergy was commonly considered the cause of the urticaria. The severity of one case of urticaria prompted further study as to whether or not bacterial allergy might be a factor. Three patients who developed urticaria while convalescing from uncomplicated scarlet fever were tested with various preparations from the hemolytic streptococci isolated from their own throats. Positive skin reactions were constantly observed from the intradermal inoculations of suspension of killed washed broth cultures, while the control tests with other substances gave no reactions. The possibility of delayed or hemorrhagic nephritis and non-suppurative arthritis as a manifestation of bacterial allergy was also considered.

Regan⁴ reports a type of immediate reaction on primary smallpox vaccination which follows the insertion of the virus at the vaccination site which occurs only in those cases in which the vaccination will subsequently prove successful. This consists in the almost immediate appearance within three to ten minutes of a minute blanched zone which quickly develops into a minute white papule with a faint surrounding erythema. The white papule, resembling an urticarial papule, appears at one part of the scratch line and is so small as to be at the border of ordinary visibility. It may be made clearly visible by the use of a small hand lens which gives a magnification of three diameters. This immediate local reaction of the white papule remains clearly visible under the hand lens magnification for twenty minutes or so; then quickly fades. Regan has apparently discovered the same sign independently which Cohen⁸ previously described, although Cohen used the pressure-puncture method instead of the scratch method of making the vaccination.

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News Items

There will be an informal meeting of all the members of the American College of Allergists, at 8 p. m., Sunday, December 10, at the Waldorf-Astoria, in Assembly Room 4-N-P.

First Lieutenant Samuel S. Burden (MC), F.A.C.A., has received orders to take charge of the Allergy Service at the A.S.F. Regional Hospital, Camp Crowder, Missouri.

F. W. Wittich, M.D., F.A.C.A., of Minneapolis, has been elected an Honorary Member of The Sociedad Argentina de Alergia.

Dr. C. R. K. Johnson, F.A.C.A., will be in charge of the Allergy Department of the Cleveland Clinic, succeeding Dr. J. Warrick Thomas, F.A.C.A., who has now become associated with the Vaughan Memorial Clinic, Richmond, Virginia.

Colonel Frank G. Crandall (MC) USA, Medical Director, Hammond General Hospital, Modesto, California, has recently been elected to Honorary Fellowship in the College for his meritorious research in and contributions to allergy.

Dr. G. Estrada de la Riva, Vedado, Havana, Cuba, has been elected to the Editorial Board of *ANNALS OF ALLERGY*. Dr. Estrada de la Riva will abstract all the scientific articles which appear in the *ANNALS* and will translate these abstracts into Spanish. The Spanish abstracts will take the place of the Spanish summaries which have formerly appeared following each article in the *ANNALS*. Dr. Estrada de la Riva is a graduate of the University of Havana and is Associate Professor of Experimental Bacteriology at that University. Dr. Henry I. Shanon, Captain (MC), Boston, will continue to review the Spanish literature for the *ANNALS*.

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Subjects and authors are listed below:

- The Eczematoid Dermatoses of Infants and Children—JEROME GLASER, M.D., F.A.C.A. Rochester, N. Y.; CHARLES S. MILLER, M.D., Corona, N. Y.
- The Diagnosis and Treatment of Allergy of the Nose and Paranasal Sinuses—FRENCH K. HANSEL, M.D., F.A.C.A., St. Louis, Mo.
- Gastro-Intestinal Allergy—ORVAL R. WITHERS, M.D., F.A.C.A., Kansas City, Mo.
- Allergy of the Central Nervous System—T. WOOD CLARKE, M.D., F.A.C.A., Utica, N. Y.
- Allergic Migraine—J. WARRICK THOMAS, M.D., F.A.C.A., Cleveland, Ohio.
- Dermatologic Problems in Allergy—LOUIS A. BRUNSTING, M.D., F.A.C.A., Rochester, Minn.
- Bronchial Asthma—LEON UNGER, M.D., F.A.C.A., Chicago, Illinois.
- Drug Allergy—ETHAN ALLAN BROWN, M.R.C.S. (London), L.R.C.P. (England), F.A.C.A., Boston, Mass.

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BOOK REVIEWS

ALLERGY IN PRACTICE. By Samuel M. Feinberg, M.D., Associate Professor of Medicine and Chief of the Division of Allergy, Northwestern University Medical School, Chicago. With the collaboration of Oren C. Durham, Chief Botanist, Abbott Laboratories. Cloth. Price, \$8. 798 pages, with 36 illustrations. Chicago: Year Book Publishers, Inc., 1944.

The author, in his preface, criticizes the majority of previous books on allergy as being "sketchy manuals" or "encyclopediaic tomes," and writes a 798-page book, with sixty-seven pages devoted to allergy to common air molds and ninety-eight pages to pollens. More illustrations and graphic line drawings demonstrating techniques, mechanism, the pathology of allergy, et cetera, could have shortened the text, with greater appeal to the student and practitioner.

With the rapid development of our knowledge of allergic diseases, it is difficult to distinguish the important subject matter. This has been made easier by the author, however, by using regular text type for essential, general, accepted material and small type for controversial subjects. There are twenty-six chapters, all summarized, and asthma and hay fever are exhaustively discussed. Differential and etiological diagnosis of all types of allergic manifestations, specific and non-specific therapy, detailed methods for symptomatic relief, elimination measures and techniques are all adequately covered. About one-fifth of the book is devoted to other allergies—"hyperesthetic rhinitis, urticaria and angioneurotic edema, atopic dermatitis and dermatophytosis, contact eczema, allergy of the digestive tract, migraine and allergic headaches, allergy of the eye, and so on." No mention is made of transient pulmonary consolidations with high blood eosinophilia (Loeffler's syndrome), which is considered by many allergists as an expression of allergy. Although convincing evidence has been offered that the *Ustilaginales* in grain mill dust is a very important factor (nearly one-fourth) to all farmers making their own cattle feed, workers in thousands of dirty "feed" mills (grain) and flour mills and grain storage bins throughout the grain belts of the Middlewest and the Pacific Northwest and Canada, as well as to all of the inhabitants of these cities and towns in these areas, it is surprising that the author would make the statement, when speaking of smuts—"that instances of allergy from such environmental or occupational exposures constitute only a very small portion of the numerous cases of mold allergy due to the spores in the general atmospheric environment."

With the exception of a few unimportant oversights, such as the use of the term "adrenalin" for "epinephrine," the subject is scholarly and is presented in a practical manner which makes the book invaluable to both the student and the specialist. It is recommended to all interested in allergy.

—F. W. W.

PATHOLOGICAL STUDY OF THE ACTION OF DENICOTINIZED TOBACCO ON THE ALBINO RAT'S BLOOD VESSELS (*Estudo Patológico da Ação do Tabaco Desnicotinizado sobre os Vasos Sanguíneos do Rato Branco*). By Lopes de Faria, University of Minas Geras. Belo Horizonte, Brazil, S. A.: Grafica Queiroz Breiner, Ltd., 1943.

The author discusses tobacco and some of its constituents, but mentions that the principal one is nicotine, principally in combination with malic acid. Later he cites the effects of smoking on the circulatory system. Under this heading he discusses the vasoconstriction of the peripheral capillaries, the angina pectoris syndrome, coronary sclerosis, and thrombo-angiitis obliterans. He refers to the work of Harkavy and Sulzberger, and also of Westcott and Wright. He mentions the fact that some authors claim that the reactions obtained with tobacco extract are specific and others non-specific, i. e., simply an irritating reaction. He also brings out the fact that Friedlander, Silbert and Laskey obtained gangrene of the fingers on the Albino

BOOK REVIEWS

rats, following an injection with an extract of tobacco, of which 60 per cent of the nicotine had been previously removed. Harkavy repeated the same experiments and found the same results but concluded that these Albino rats were specifically sensitive to the tobacco itself, even though the nicotine was removed before. He ends the first chapter with the anatomical pathology of thrombo-angiitis obliterans.

In the second chapter the author discusses the experiments he performed. Under this heading he goes into detail about the necessary armamentarium needed for these experiments. First, he mentions the materials needed, then the method used. In the experiments of Harkavy he states that the Albino mice received test injections daily, intraperitoneally, of 0.1 cubic centimeter; time of the experiment was six to twelve weeks. During this time gangrene appeared in the fingers of these animals injected with tobacco extract. Only the male animals had gangrene and were sensitized specifically to the tobacco (Proof of Schultz-Dale).

There is an English summary at the end, four pages in length. In the discussion he mentions that there is still need for research as regards the nicotine content of tobacco extracts.

Concerning Harkavy's experiment, the author advances the hypothesis that the varieties of tobacco he employed may have had much lower antigenic power. This lower antigenic power may depend on the varieties of tobacco or on the district in which they were grown (Minas Gerais, Brasil).

He makes the following conclusions:

1. The tobacco grown in Minas, when deprived of its nicotine, produces no specific hypersensitiveness in white rats as shown by the precipitin and the Schultz-Dale tests.

2. The tobacco grown in Minas Gerais, when deprived of its nicotine, does not produce pathological changes in the blood vessels of the heart and of the extremities of white rats.—H. I. S.

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*"A new type of medication to be used in Bronchial Asthma and other Allergic conditions." New Eng. Jour. of Med., 223:843-846, 1940.

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Abstract

PALINDROMIC RHEUMATISM: A "new" oft-recurring disease of joints (arthritis, peri-arthritis, para-arthritis) apparently producing no articular residues—report of thirty-four cases; its relation to "angioneural arthrosis," "allergic rheumatism" and rheumatoid arthritis—P. S. Hench and E. F. Rosenberg, Arch. Int. Med., 73:293, (April) 1944.

Palindromic rheumatism has as outstanding characteristics: multiple afebrile attacks of acute arthritis and peri-arthritis, with pain, swelling, redness and disability of one or more small or large joints in an adult of either sex. Recurrence of the complaints at irregularly spaced intervals has been noted with the attacks being sudden in onset and of comparatively short duration. Six typical cases are described with data on an additional 28 cases being presented in tabulated form. Joints most frequently affected were (in order) the fingers, wrists, shoulders, knees, toes and elbows. All patients stated that the attacks had been very numerous (hundreds of them). No residual pathology could be determined by any means. There were no constitutional reactions during the attacks. Ten of the patients experienced recurring swellings of the para-articular soft tissues. The more common reactions were those of the articular, peri-articular or para-articular tissues, with the presence of nodules in the intra or subcutaneous tissues being somewhat rarer. Total and differential leucocyte counts were normal during and between attacks. Blood uric acid determinations were normal. Sedimentation rates were normal or only slightly elevated.

The authors conclude that some unknown irritant is the causative factor, as no definite gross or microscopic changes could be noted. In the investigation of the etiology, allergic reaction in the joints is considered. Sixteen of the patients had no clinical signs of allergy and eighteen experienced a total of twenty-one varied possibly allergic reactions. Points for and against the allergic factor are mentioned. The attacks could not be correlated with any acute exogenous infection. Rheumatoid arthritis is convincingly differentiated from this condition by the persistent absence of chronic arthritis even after scores of attacks and years of disease. The use of epinephrine and related compounds, histaminase and histamine desensitization has been relatively unsuccessful in the therapy of these 34 patients. Other forms of therapy—fever, measure to combat infection, etc.—are productive of similar results. Patients are more likely to become better than worse with time. No evidence of crippled joints has been reported.

L.J.H.